# REPORT RESUMES

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THE FIGHT FOR CLEAN WATER.
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THIS PUBLICATION DISCUSSES IN DEPTH THE PROBLEM OF WATER POLLUTION AS SEEN BY THE FLORIDA STATE BOARD OF HEALTH. DOMESTIC SEWAGE, INDUSTRIAL WASTES, AND ALLEVIATION ACTIVITIES OF THE STATE BOARD OF HEALTH AND COUNTY HEALTH DEPARTMENTS ARE DESCRIBED. SIX APPENDIXES PRESENT CORRESPONDENCE AND REPORTS REGARDING THE PROBLEM. THIS IS AN ISSUE OF "FLORIDA HEALTH NOTES," VOLUME 59, NUMBER 1, JANUARY 1967. (SF)

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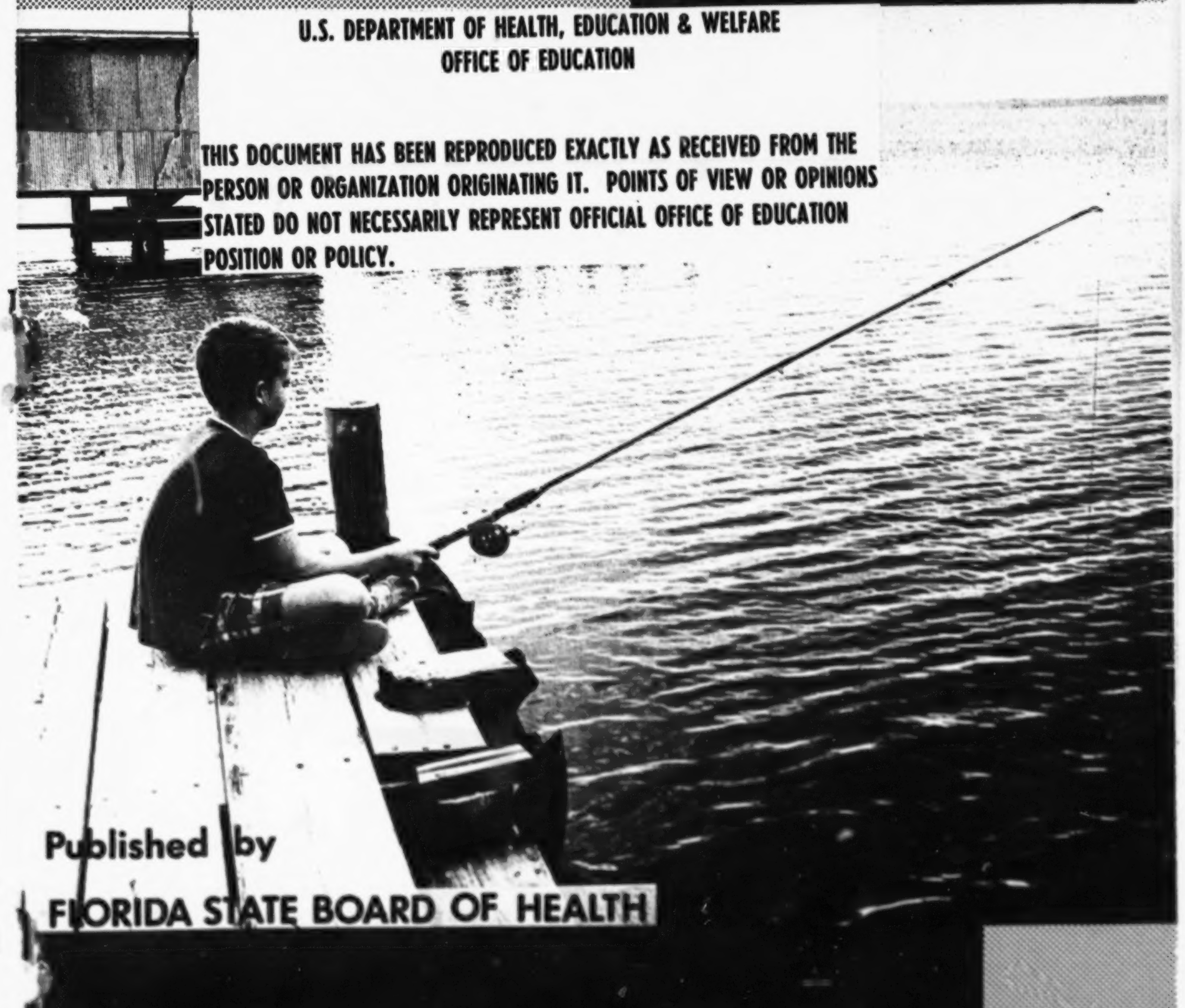

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**The State Board of Health needs additional resources to keep ahead of the state's expanding population and industrial growth which threatens Florida's natural beauty. (Cover photograph) Whether or not Billy catches a fish depends upon the amount of pollution dumped into these waters by cities and industry.**

# *The* FIGHT *for* CLEAN WATER

**FLORIDA HEALTH NOTES**

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# TABLE OF CONTENTS

Page

Introduction 6

What are Water's Uses? 7

Overlapping Interests and Demands 7

What is Water Pollution? 8

What Causes Water Pollution? 11

Authorization of the State Board of Health and County Health Departments 13

The Water Picture in Florida 15

The State Board of Health's Concern about Water Quality and Pollution 17

DOMESTIC SEWAGE 17

- Florida's Expansion in Past 20 Years 17
- Domestic Effluent Discharges 22
- Sewage Treatment is Necessary 22

INDUSTRIAL WASTE 25

- A More Vexing Problem 25
- Industrial Pollution and Trouble Spots 27
- Pollution from Agriculture 29

State Institutions and Pollution 32

ACTIVITIES OF THE STATE BOARD OF HEALTH AND COUNTY HEALTH DEPARTMENTS 34

- Northeast Florida Region 35
- Central Florida Region 37
- Southwest Florida Region 38
- Southeast Florida Region 39
- Dade County 39
- Broward County 40
- Manatee County 41
- Hillsborough County 41
- Pinellas County 42
- Palm Beach County 43

Water Pollution Is a Health Problem 43

THE STATE BOARD OF HEALTH'S RESOURCE PROBLEMS ........ 45
Personnel and Finances ........ 45
The Lack of Engineers ........ 46
Budget Requests ........ 46
Legal Aspects of Water Pollution ........ 48
Legal Action by the State Board of Health ........ 49
Are We Willing to Pay for What We Want? ........ 50

SELECTED BIBLIOGRAPHY ........ 52
APPENDIX A—Letters between Ray L. Wilson, attorney, and Wilson T. Sowder, M.D., Florida State Health Officer ........ 55

APPENDIX B—Report from Vincent D. Patton, director of Division of Industrial Waste ........ 61

APPENDIX C—Reports from regional sanitary engineers ........ 65
1. Nick Mastro, Northeast Florida Region ........ 66
2. G. W. Folke, Central Florida Region ........ 68
3. E. M. Larsen, Southwest Florida Region ........ 72
4. Richard Starr, Southeast Florida Region ........ 78
5. K. K. Huffstutler, Polk-Hillsborough Air Pollution Control District ........ 80

APPENDIX D—Reports from county sanitary engineers ........ 83
1. Robert L. Quick, Dade County ........ 84
2. George T. Lohmeyer, Broward County ........ 86
3a. Frank L. Cross, Manatee County ........ 88
Supplemental reports from Manatee County ........ 90
3b. Allen Kretschmar, sanitarian ........ 90
3c. George Dame, M.D., director ........ 92
4. Donald W. Rogers, Hillsborough County ........ 94
5. Harold Leadbetter, Pinellas County ........ 96
6. Lawrence D. Lukin, Palm Beach County ........ 101

APPENDIX E—"Health Aspects of Water Pollution" from weekly compilation of Presidential Documents ........ 103

APPENDIX F—Letters from Wilson T. Sowder, M.D., Florida State Health Officer, and Howard W. Chapman, associate regional health director for environmental health, U. S. Public Health Service, Region IV ........ 109

# The Fight For Clean Water

Water is necessary for all living things. All of the larger, and many of the smaller species of life — animal, plant and man — are dependent upon this mixture of hydrogen, oxygen and some 33 other separate substances for their very existence.

Water is the most massive quantity of liquid material on earth. There are some 336 million cubic miles of it in one form or another. About 98 per cent of this water is in the oceans and seas and most of the rest is locked up in ice on polar caps and glaciers. Man gets along on a small .027 per cent in fresh-water rivers, lakes and ground water. These vital stocks of water are replenished by an even tinier but highly mobile .000053 per cent which moves around in the atmosphere and falls as rain.[1]

From earliest times, man has settled where water and food were plentiful. He learned that plants and animals needed water. The first civilizations grew in the river valleys of the Nile, Tigris, Euphrates, Indus and Ganges and whole tribes moved up and down the rivers looking for new lands and a better life. For centuries there has been enough water to dilute the wastes that man has dumped into the waters of the earth. There was a time when waters were polluted only by the falling leaves of the trees and the soil that it picked up in its movement. In a continuing cycle, trees, plants and grasses protected the water and soil with their roots.

But with expanding populations and evolving civilizations, man developed many uses for water besides the necessary activities of drinking, cooking, bathing and transportation. He removed the trees and plants which held the soil; he poured raw sewage into the streams; and with industrialization, he added much more dangerous pollutants.

In 1900, a person used an average of five gallons of water per day for his own use. Today, the United States has become a nation of concentrated communities. Even though Florida's cities are bright and sparkling as compared with the grime of Northern communities, the daily bath is a social "must"; clothes, household linens and curtains need frequent washing; and there is an ever-increasing growth of lawn sprinklers, air conditioners, electric dishwashers and backyard swimming pools.

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[1] Renn, Charles E. *The Johns Hopkins Magazine.* Vol. 17, No. 8, July 1966, p. 3.

The average Floridian uses 50 gallons of water a day for his own personal use. If domestic and municipal uses are included, the amount averages 150 gallons a day; with the inclusion of agricultural and industrial products, it averages from 1500 to 2000 gallons per person each day.

## What are Water's Uses

There are many groups interested in water. Each has its own use of the resources. Everyone wants clean water for human consumption—that is for drinking, cooking and bathing.

Clean water is needed for producing food, watering stock, irrigating fields, and harvesting fish and shellfish.

Clean water is needed for recreation—boating, swimming, camping and sport fishing.

Clean water is needed to support wildlife resources, not only fish and other aquatic life but also animals and birds.

Clean water is needed for industry. Manufacturers of soft drinks, beer and drugs frequently demand water of a very high quality. Such industries as pulp and paper, phosphate processing, agriculture, citrus processing and chemicals require large amounts of water. During the past 25 years, the breakthrough of science and technology has been greater than it was during the entire period from the year 1 to 1940. Progress has demanded additional uses of quality water in larger amounts than man has ever needed before.

## Overlapping Interests and Demands

The water resources of Florida belong to the people. However, there are a number of groups who use the state's water resources and each group is intent on gaining its own worthwhile goal.

— Providers of public water supply would like to maintain every stream in a state of pristine purity without turbidity, color, taste or bacteria so that water could be supplied to the public with a minimum of treatment.

— Nature lovers view every lake and river as a national treasure to be guarded against trespassers.

— Those concerned with public waste disposal would like to have access to any available stream for the disposal of wastes with a minimum of treatment.

— Industrial users frequently require purer water for products and industrial processes than is necessary for the usual public water supply.

— Industrial establishments requiring waste disposal would like to use the streams as a natural receiver of liquid wastes with a minimum of treatment.

— Fish and wildlife conservation groups want every waterway as a natural resource primarily for the propagation of fish and wildlife.

— Agricultural interests want to irrigate all dry lands with pure water and drain all wet lands without too much expense.

— Cattlemen object to elimination of waterways or the polluting of water usable for livestock but also insist on their rights to drain pasture lands.

— Electrical power interests value flowing streams as a potential source of power and, in turn, want to put hot water from generating plants back into the streams.

— Shipping interests maintain that the main function of water is for shipping plus the receiving of bilge waters and wastes from ships.[2]

All of these claims are legitimate and each must be heard and respected. But water is limited and many of the uses are not compatible with another. To give priority to one use inevitably means sacrifices of the other interests. Perhaps restricting use of waters by zoning to compatible uses would be an answer.

## What is Water Pollution?

Polluted water is the opposite of clean water. Although Florida's pollution problem may not be as dramatic as that of other areas, such as New Jersey, New York and the District of Columbia, right now is the time to prevent further polluting of our clean waters.

There are many definitions of water pollution. The sanitary engineer has one definition; the lawyer has another; the layman may have a third. A pollutant may be anything of a deleterious nature added to water. Water pollution may be anything that has been used for domestic and industrial purposes and channeled into an uncontaminated stream thereby polluting the water and reducing its usefulness. The act of polluting Florida's waterways may be that of adding or emptying into a body of water anything that makes it unsuitable for the purpose for which the water was intended or makes the water uninhabitable for its natural aquatic life.

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[2] Lee, David B. Unpublished paper given at Twenty-First Annual Meeting of the Soil and Water Conservation Supervisors. Tampa, Florida. August 18, 1966.

There are Florida laws which make it unlawful for any rubbish, filth, poisonous or noxious substances likely to affect the health of persons, fish or livestock to be placed in or deposited where it may be washed or otherwise admitted to any of the waters of the state.[3]

There are a number of pollution classifications listed by various reports and authorities:

**Sewage and other oxygen demanding wastes** include organic substances from domestic sewage and such industries as food processing plants. These wastes are reduced to stable compounds

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[3] *Florida Statutes.* Chaper ·387.08, p. 1903-1904.

A youngster stirs up oily pollution in a Florida stream. Such pollutants make streams unhealthy.

through the action of aerobic bacteria which require oxygen in their life processes.

**Infectious agents** are in the wastes from municipalities, sanatoria and certain kinds of industries, such as tanning or meat processing plants, which contain human and animal wastes. These organisms can cause such diseases as typhoid fever, virus infections and intestinal disorders in persons ingesting them directly through drinking untreated water or indirectly through recreational activities.

**Plant nutrients** are stable mineral compounds which remain after the oxygen-demanding organic wastes are removed by treatment. These nutrients are introduced into streams in large amounts through discharges from municipal sewage and industrial waste plants, or leached from farmlands and citizens' lawns. The nutrients, of which nitrogen and phosphorus are two important examples, are used for food by aquatic plant life, such as algae and water weeds.

**Organic chemical exotics,** such as detergents, insecticides, pesticides and weed killers, are carried into water bodies with domestic and industrial wastes, washed off vegetables and land surfaces or introduced directly into the waters to control pests or rough fish. Only a limited amount of these chemicals are removed from water, either by sewage treatment plants or water purification plants.

**Other mineral and chemical substances** result from mining or industrial processes, or from nature itself. They include a wide variety of common salts, metals and metal compounds in solution or as fine particles or acids. Some have very toxic effects.

**Sediments,** primarily from soils and lands washed by storm and floodwaters, are not normally a primary concern of water pollution agencies. But sediments are important because they reduce shellfish and fish spawning grounds and thus man's food supplies. They reduce aquatic plants which are required in the process of maintaining an adequate dissolved oxygen balance in water and also plug water filters and erode pumping equipment.

**Radioactive substances** which are possible sources of water pollution are significant because of three important factors: the quantity of material involved, the duration of waste discharge and the degree of hazard associated with the specific radioisotopes involved. Sources of radioactive substances may be waste products from mining or refining of radioactive material or waste products from power reactors for industrial, medical or research purposes which have been allowed to escape.

**Heat** is a pollutant. Tremendous amounts of water are withdrawn daily from streams and lakes for cooling purposes by steam electric power and other industrial plants. After use, these waters are returned to the river or lake from which they were drawn. Large amounts of heat are transferred to the waters, and since the oxygen which the water holds in solution diminishes with increasing temperature, the adding of heat cuts down the ability of the waters to assimilate oxygen-demanding pollution or support fish life.[4]

## What Causes Water Pollution?

It is inevitable that the quality of water is altered with its use. The control of pollution therefore is a problem of critical importance. The method of control needs to vary with the degree and type of pollution, and there are degrees of pollution.

— Natural pollution occurs when the water picks up impurities from the earth's cover, its soil and minerals. The water is polluted before man uses it.

— Permissible pollution is the planned use of the water resources where effluent discharge is highly treated.

— Allowable limited pollution is the reasonable overloading of streams which reduce the full usefulness of the water resources for a limited zone without danger to other beneficial water users.

— Excessive or gross pollution is the misuse, destruction of the water sources.[5]

Water is essential for most of man's activities and one of its important uses is the carrying away of waste materials of which there are many kinds. Some materials can be handled in limited

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[4] Kerr Report No. 3, *Water Resources Activities in the United States*. U. S. Government Printing Office, 1960.

[5] *Florida's Water Resources*. Report of the Florida Water Resources Study Commission to the Governor and 1957 Legislature. Gainesville, Florida, 1956. p. 21.

### The Importance of Florida's Waters

"Among Florida's major assets or natural resources are its sunshine, its climate, its water supplies, its streams, its lakes and its shores. Florida sunshine is said to have a value of two billion dollars a year as a tourist attraction. But even Death Valley has an abundance of sunshine. So does the Sahara Desert. Neither are sought as places to live, however, and it becomes immediately apparent that the greatest of all Florida natural resources are its water supplies, including its streams and its beaches. Without them, our sunshine and climate would be of little value."

— Smith, David B., STREAMS IN FLORIDA, Florida Engineering Series No. 1, College of Engineering, University of Florida, Gainesville, 1954. From the Preface by John E. Kiker, Jr.

amounts without damage to water resources. Some other types of wastes can be treated satisfactorily before allowing them to enter water resources without danger to the streams. Some inorganic wastes of industry cannot be handled the same way as organic wastes because they interfere with the treatment process and therefore must be handled separately. Other wastes are toxic or otherwise harmful. If wastes are dumped into water courses or permitted to find their way into underground aquifers, they can render water unsuitable for further use.

The natural activity of water provides some purification of organic wastes because of its ability to assimilate waste. Inorganic wastes are generally accumulative and are not quickly dissipated. Unless safeguards against such wastes are installed, both man-made and natural pollution tends to increase. The value of water resources is limited by quality as well as quantity and heavily polluted waters should never be used if other waters are available.[illegible]

The main detrimental characteristics associated with the discharge of untreated or inadequately treated sewage into surface and underground waters are unhealthy concentrations of disease bacteria, depletion of dissolved oxygen, unsightly floating solids

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[illegible] Ibid. p. [illegible]

and turbidity, odors and stimulation of aquatic plant growth. The most important use which might be limited by sewage pollution is the use of water resources as public water supplies.

Wastes from industries are as varied and complex as the industries themselves. Such wastes may contain organic matter similar to that found in sewage, or the wastes may contain other materials, such as oils, acids, greases, chemicals and mineral salts. Florida has a number of industries which have liquid wastes. These are citrus processing, vegetable canning, meat processing, brewery, milk products, crude sugar, mining, phosphate, chemicals, synthetic fibers, acid and fertilizer, pulp and paper, pine tar extraction, metal processing, tannery, oil and asphalt, fish oil, laundry and weaving.

In the past, industrial wastes have been partly responsible for the low oxygen content of tidal waters, streams and portions of lakes and bays. Wastes no longer pollute many of these waters because of the development of useful by-products and in-plant process changes which have been most lucrative to some industries. Waste treatment to permit the reuse of wash water in the phosphate processing field, and treatment of citrus pulp to reduce pollution potential and make fertilizer and animal food have done much to eliminate previously important waste problems.[7]

## Authorization of the State Board of Health and County Health Departments

Why is the State Board of Health interested in maintaining clean water and controlling water pollution? Under Chapter 381 of **Florida Statutes**, it is authorized to "commence and maintain all proper and necessary actions and proceedings to enjoin and abate nuisances dangerous to the health of persons, fish and livestock . . ."[8] and ". . . to protect and preserve the public health."[9]

Chapter 154.01 of **Florida Statutes** gives counties and cities the authorization to ". . . cooperate with the state board of health

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[7] Ibid. pp.44-46

[8] *Florida Statutes.* Chapter 381.031(4)(b), p.1880

[9] *Florida Statutes.* Chapter 381.031(4)(d), p.1880.

**Some exotic pollutants, such as detergents, are not affected by processing in a sewage treatment plant. The State Board of Health is trying to halt the practice of allowing such effluents to flow into drainage ditches and streams.**

in the establishment and maintenance of fulltime local health units in such counties for the control and eradication of preventable diseases, and inculcate modern scientific methods of hygiene, sanitation and the prevention of communicable diseases."[19]

The State Board of Health has been given the job of supervising the control of water pollution in Chapter 387 which states:

> "Any person, firm, company, corporation or association in this state, or the managing agent of any person, firm, company, corporation or association in this state, or any duly elected, appointed or lawfully created state officer of this state, or any duly elected, appointed or lawfully created officer of any county, city, town, municipality or municipal government in this state, who shall deposit, or who shall permit or allow any person or persons in their employ or under their control, management or direction to deposit in any of the waters of the

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19. *Florida Statutes.* Chapter 154.01, p. [illegible].

lakes, rivers, streams and ditches in this state, any rubbish, filth or poisonous or deleterious substance or substances, liable to affect the health of persons, fish or livestock, or place or deposit any such deleterious substance or substances in any place where the same may be washed or infiltrated into any of the waters herein named, shall be deemed guilty of a misdemeanor and upon conviction thereof in any court of competent jurisdiction, shall be fined in a sum not more than five hundred dollars; provided that the carrying into effect of the provisions of this section shall be under the supervision of the state board of health."[11]

The State Legislatures of the past have declared that water pollution is a health hazard and have given the State Board of Health the authority to make broad policies concerning the control of water pollution as it affects public health. Other state agencies, such as the Game and Fresh Water Fish Commission, the State Board of Conservation, State Soil Conservation Board, State Department of Agriculture and many local governments have interests in water control districts, waterway beautification projects, water management programs, shellfish harvesting and other programs which also enter into the water pollution control picture.

This issue of **Florida Health Notes** will tell you what the State Board of Health and County Health Departments are doing to protect the clean waters of Florida. While they have been given the authority to supervise the control of water pollution, they frequently have not had adequate resources to carry out their programs. Much progress has been made in the past 20 years, but there is much to be done. This issue of **Health Notes** also will tell you what steps the State Board of Health is taking to enlarge its program.

## The Water Picture in Florida

Florida is a state of 58,560 square miles and contains some 30,000 lakes. Because of its peninsular shape, no part of the state is farther than 70 miles from the Atlantic Ocean or Gulf of Mexico. It has more shoreline than any other state, some 1200 miles of general coastline and nearly 9000 miles of tidal shoreline.

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[11] *Florida Statutes*, Chapter 387.08, pp. 1999-2000.

About 24 per cent of the water received as rain moves to the ocean via surface channels, and as it travels it forms 12 large river basins and many small ones. Surface waters average 40 billion gallons flow each day with the larger important rivers, Apalachicola, Choctawhatchee, Escambia, Suwannee and St. Johns, contributing some 88 per cent of the state's surface flow. In the south, Lake Okeechobee, which at its normal stage covers 700 square miles, is a main focal point of the South Florida Flood Control District. The Peace River, which flows through the citrus and phosphate belts, is important because of its use as a public water supply for some cities and the depository of sewage plants' effluent for other cities.

The course of a stream, the rapidity of flow, characteristics, fitness for use and other factors determine the value of a stream as a natural resource. Unlike many other states, which may have to ration water in the near future because of increasing population, industrial expansion and demands for recreational facilities, Florida has an extraordinarily large supply of water and an equally large and varied demand for water because of the state's year around warm climate.

But according to **Florida's Water Resources**:

> "There are some areas in Florida where gross pollution exists, but in no case does gross pollution extend more than a few miles, and a few cases can be cited where pollution is restricting the total use of a stream for a beneficial purpose. It can almost be said that Florida has no water so seriously polluted that it cannot be recovered. These statements must be qualified, however for there are cases where the uses are partially restricted, and there are indications that these pollution conditions will become more serious unless corrective or preventive action is taken."[12]

The problem of water pollution is complicated by the fact that Florida has a large tourist industry which is dependent upon the state's natural climate and resources. Approximately 16 million tourists visit the state each year and spend some $3 billion. These visitors expect to find good fishing of all kinds, boating and bathing facilities, picturesque lakes, streams and springs and clean waters. The outdoor recreational facilities are perhaps the greatest incentive that tourists have for coming to Florida each year.

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[12] *Op. Cit. Florida Water Resources*, p. 62.

### The State Board of Health's Concern About Water Quality and Pollution

The State Board of Health has been interested and concerned about water quality in Florida for many years. The public water supply, production of seafood and shellfish and cleanliness of public bathing places are prime examples of areas in which the State Board of Health has jurisdiction.

The growth of cities and their increasing amount of wastes, the rise in the number of small motorboats and their sewage discharge, and the expansion of harbors with their many commercial and Naval ships and fishing boats have endangered the quality of water.

Streams and lakes are usually in balance in nature. Fish and other aquatic animals take in oxygen and give off carbon dioxide which is absorbed by plants that in turn give off oxygen. When pollution enters the waterway, the balance is upset.

The amount of pollution that a stream can absorb is limited by the amount of oxygen available in the water. Oxygen is required for certain bacteria to live and these organisms digest and render harmless sewage and other organic matter. Inorganics, such as mineral salts and synthetic materials, are not affected by natural purification processes. When too much waste is poured into the stream, the oxygen is exhausted, all forms of life die, except the non-oxygen-demanding bacteria, anaerobic, and the stream becomes septic.

## DOMESTIC SEWAGE

### Florida's Expansion in Past 20 Years

At the same time that Florida is greatly dependent upon its tourist trade for a large part of its economy, it is also becoming greatly urbanized and industrialized. The population has increased

Florida has built some 1550 sewage treatment plants, such as this one, in the fight for clean water. Much of the impetus has been provided by the State Board of Health.

over 1.7 million in the past 10 years and nearly four million in the past two decades. Over 70 per cent of the people live in 11 counties —Dade, Duval, Hillsborough, Pinellas, Broward, Brevard, Volusia, Orange, Escambia, Polk and Palm Beach. Great concentrations of people usually lead to domestic and industrial pollution.

Florida has been called the "septic tank state" in the past, simply because this method of domestic waste disposal has been widely used. While the population has increased to nearly six million and 70 per cent of the population is urbanized, only 50 per cent of the people are provided with sewers and adequate sewage treatment.

**Yet in spite of this, Florida is one of the leading states in modern sewage treatment plant construction. In 1930, when the population was 1.1 million, there were 20 sewage treatment plants in the state. By the end of 1965, there were 1539 sewage treatment plants in operation.**

In 1946, the homes of eight per cent of the state's population were connected to some kind of sewerage system. That year the State Board of Health received and approved 34 sewerage projects which cost an estimated $11 million.[13] By 1956, 43.8 per cent of the population was on sewers; 272 plants were in operation and the State Board of Health received and approved plans for 259 sewage treatment plants estimated at $30.2 million.[14] During 1965, plans for 822 projects costing an estimated $38.2 million were received and approved by the State Board of Health[15].

During the past 20 years, Florida has spent $626 million on sewerage systems. A total of $473 million of this sum was spent in the last decade. During this period, 1439 sewage treatment plants were constructed serving over 648,000 persons, or approximately 37 per cent of the 10-year population growth of 1.7 million. It is sad but true that during this time, 5008 privies and 317,436 septic tanks were also installed, serving 1.1 million persons.[16]

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[13] *Annual Report.* Florida State Board of Health, 1946, p. 61.

[14] *Annual Report.* Florida State Board of Health, 1956, p. 141.

[15] *Annual Report.* Florida State Board of Health, 1965, p. 225.

[16] *The Sewerage Problem.* Unpublished paper by Division of Waste Water and Division of Special Services, Bureau of Sanitary Engineering, Florida State Board of Health. Presented at Urban Planning for Environmental Health Course. Sarasota, Florida, June 20, 1966.

During the past two decades, many major bodies of water were cleaned up through the untiring efforts of local interests and the State Board of Health. Among these were Biscayne Bay in Dade County and Lake Worth in Palm Beach County. Also, portions of Tampa Bay in Hillsborough County, Sarasota Bay in Manatee County and Bayou Chico in Escambia County have been cleaned up through the construction of sewage or industrial waste treatment plants.

In 1941, when the population of Miami was 172,172 persons, the principal place for the disposal of domestic wastes for the city was Biscayne Bay which received approximately 26 million gallons of raw sewage a day. The State Board of Health made a study that year and recommended the construction of one of two types of sewage treatment plants.

At that time, there were "many sources of sewage other than the Miami River. Of a total of 70 outfalls, 29 emptied into the Miami River, 10 between Rickenbacker and Venetian Causeways, 24 between Venetian Causeway and Bay Point along the Miami shoreline and seven outside the study area."[17]

In 1949, another study was made and the director of the Bureau of Sanitary Engineering of the State Board of Health, recommended and urged the City Commissioners to proceed with the designing, constructing and operating of an adequate collection system and sewage treatment plant to alleviate the public health hazards existing in Biscayne Bay.[18]

In 1957, Miami started construction of a sewage treatment plant on Virginia Key which had a design capacity of 47 million gallons per day. This plant resulted in the diversion of 30 to 50 million gallons of raw sewage each day and made most of Biscayne Bay suitable for limited recreational activities, such as boating and water skiing.

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[17] McNulty, J. Kneeland, Reynolds Ernest S. and Miller, Sigmund M. "Ecological Effects of Sewage Pollution in Biscayne Bay, Florida; Distribution of Coliform Bacteria, Chemical Nutrients and Volume of Zooplankton." *Biological Publication in Water Pollution, Transactions of the 1959 Seminar.* U. S. Department of Health, Education, and Welfare, Public Health Service, Robert A. Taft Sanitary Engineering Center, Cincinnati, Ohio, p. 201.

[18] Letter of transmittal, *Biscayne Bay Pollution Survey, May through October 1949,* Bureau of Sanitary Engineering, Florida State Board of Health.

Lake Worth has also become a recreational area with the installation of sewage treatment plants in the communities along the shores. Palm Beach has a sewage collection system with an ocean outfall; West Palm Beach has installed a complete treatment facility with final chlorinated effluent being discharged into the lake; Riviera Beach, Lake Park, the Village of North Palm Beach, the community of Lake Worth and Boynton Beach have installed sewers and treatment plants; Lantana is connected to the Lake Worth sewerage facility. Prior to this time, many of these communities were dumping untreated sewage directly into the lake.

A 1962 survey conducted by the State Board of Health found that the sewer outfall to Lake Worth was limited to: highly treated effluent from the West Palm Beach sewage treatment plant, emergency overflow drains from various lift stations along the shore of the lake, a number of storm sewers, and industrial waste from one milk pasteurization plant.[19]

While much progress has been made in the past 20 years, Florida communities are continuing to build sewage collection and treatment systems. The State Board of Health encourages such construction by offering professional guidance and advice on a regional and county level and approval of plans on the state level.

During 1965 construction or renovation of sewage treatment systems was underway at Dania, North Miami, Auburndale, Eau Gallie, Winter Haven, Bradenton, Fort Walton Beach and Tallahassee; construction was completed in such municipalities and/or sanitary districts as Fort Lauderdale, South Palm Beach, Cape Canaveral, Long Key Sanitary District, Blountstown, Holly Hill, Lake Butler, Pahokee, Daytona Beach, Starke, St. Petersburg and Dunnellon; plans were approved for Coral Gables, South Miami, Opa Locka, Holmes Beach, St. Petersburg's main plant, Deerfield Beach, Leesburg, Pensacola, Niceville, Marianna, Umatilla, Naples and Winter Park.

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[19] *Progress Report, Lake Worth Survey, July-August 1962.* Bureau of Sanitary Engineering, Florida State Board of Health.

## Domestic Effluent Discharge

With the construction of so many sewage treatment plants, there must be some place to empty the treated effluent. All counties do not have access to salt water and thus the effluent must be discharged into nearby freshwater streams. Waterways and lakes must continue to function as the final place of disposal for effluent, simply because there is nowhere else to put it. However, the wastes must be engineered out of streams to the maximum extent so that the waters can be used over and over again for all purposes which water must serve.

### Water Sampling and Testing Doubles

The work of testing water samples has more than doubled during the past decade. Over 354,000 water samples were analyzed in 1965 by the State Board of Health's Bureau of Laboratories and the engineering laboratory of the Bureau of Sanitary Engineering as compared with 152,000 examinations performed in 1955. These analyses do not include the thousands of bacteriological water analyses made each year by environmental health personnel in 11 of the County Health Departments.

Jacksonville and a few smaller cities discharge some 16.8 million gallons of raw sewage each day into a few of Florida's streams. At the same time, other communities are discharging over 450 million gallons per day of treated domestic sewage which has an average biochemical oxygen demand (BOD) reduction of 70 per cent. **This 70 per cent compares most favorably with a nationwide average of 45 per cent BOD reduction.**

The State Board of Health is looking for treatment devices which will bring the BOD reduction to 100 per cent, but this will take additional funds for research and installing the equipment.

## Sewage Treatment is Necessary

At one time in Florida's history, when there were fewer people, the streams and lakes were adequate to dilute the waste material entering the streams. Today the theory of dilution does not work because the increasing numbers of people and wide variety of pollutants make it impossible for the waters to handle the pollution.

During the past 20 years and through the efforts of the State Board of Health, 1550 sewage treatment plants have been built and the spread of water pollution curbed, despite increasing industrial development and the rapid growth of the population. There are many problem areas. One of the outstanding examples is that of Jacksonville and the St. Johns River. A large percentage of the waters of the state is not polluted and probably less than five to 10 per cent have any gross pollution.

In the late 1940's, the State Board of Health and the U. S. Public Health Service made an extensive study of the St. Johns River and recommended the construction of a sewage treatment

The City of Jacksonville dumps approximately 15 million gallons of raw sewage a day into the St. Johns River. One of the outfalls is located near these buildings on the waterfront. Plans are underway to relieve the situation.

plant for the City of Jacksonville. Since that time, the State Board of Health has tried to influence the city and surrounding suburbs to end the pollution of the St. Johns.

In 1953, Jacksonville retained Dr. Abel Wolman of Johns Hopkins University, a consulting engineer of international reputation in the field of water pollution, who stated that the city did not need waste treatment for many years to come. An advocate of the theory, "The solution of pollution is dilution," Dr. Wolman expressed the opinion that Jacksonville could dispose of its raw sewage in the St. Johns River, because in the river that flowed past its door was the largest volume of moving water in Florida.

In 1955, the consulting engineering firm of Metcalf and Eddy of Boston, Massachusetts, filed a report and recommended a master plan covering Jacksonville-Duval area which stated, "The substantial elimination of the discharge of untreated sewage from the City of Jacksonville into the St. Johns River and its tributaries would not be needed until the fourth stage of the program." About this time, Jacksonville requested the State Board of Health to approve the sewering of the northwest section of the city and the piping of untreated waste into the river at the Main Street Bridge.

In spite of the opinion from these distinguished sources, the State Board of Health and its Bureau of Sanitary Engineering steadfastly rejected the proposed solutions to the problem. Jacksonville was notified that the Board would not approve such plans and it would use all legal means to prevent further degradation of the river. The city then planned a sewage treatment plant which started operation in 1961 and now treats approximately five million gallons of sewage a day. The plant has a capacity of treating 12 to 13 million gallons daily but the city lacks the sewers to carry the water to the plant for treatment.

Plans are underway by Jacksonville to eliminate raw sewage and some industrial waste from the St. Johns River and its tributaries at an estimated cost of $25 to $30 million. This is the first phase of the project. The State Board of Health, meanwhile, has made more progress in Duval County by bringing about the construction of some 80 large treatment plants.[20]

# INDUSTRIAL WASTE

## A More Vexing Problem

As previously stated, industrial wastes are as complex and varied as industry itself. Wastes put out by some industries are organic and can be treated along with or in the same way as domestic waste. But industries, such as paper and pulp and chemicals which use large amounts of water, frequently are reflushing the water with contaminated effluent. Many times these pollutants cannot be treated the same way as domestic wastes and consequently the waste waters are let loose into a nearby ditch without treatment. These waters then flow into larger ditches, streams and rivers, contaminating the whole waterway system.

These pollutants are new to our waters. It is happening at a time when the growth of cities and the boom in industry are putting a strain on our water resources. Not only are we using more water than before but we are also using it in more complicated ways; and flushing it back dirty to be used over again by the next user. The next man may drink it or use it to feed livestock, grow crops, raise fish or other products.

Industrial pollutants are found in many forms. Not only are they found in washings from airplanes, citrus processing and milk pasteurization plants and paper mills, but they are found in the more exotic problem-products such as household detergents, farm insecticides and wastes from plastic manufacturing. Radioactive wastes are being carefully watched by such agencies as the Brevard County Health Department and the State Board of Health's Radiological Laboratory. Chemicals, minerals and stable compounds which do not break down are of great significance in water pollution control.

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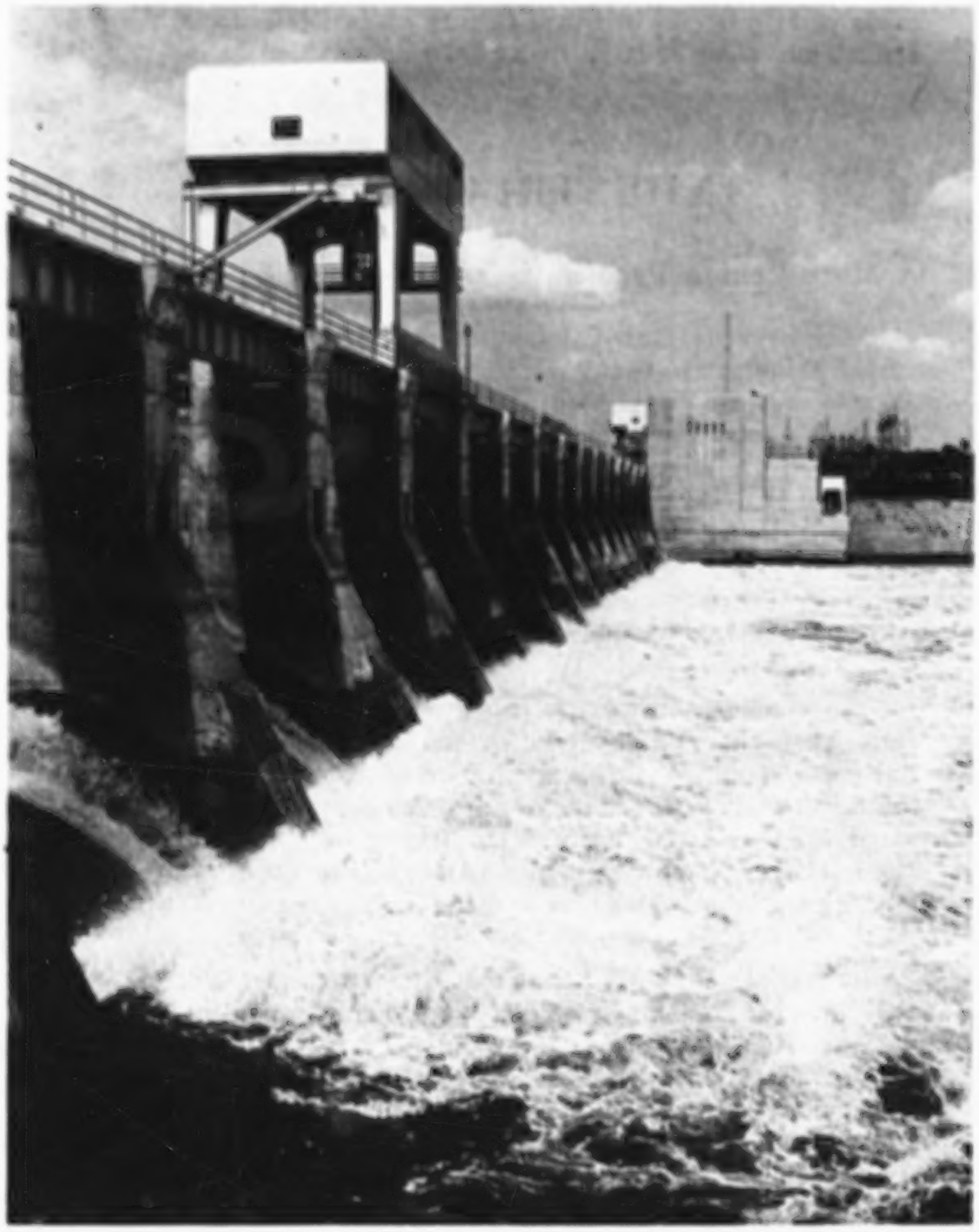
20. Appendix A. Letters between Ray L. Wilson and Wilson T. Sowder, M.D.



Water in a dam is used for electrical, conservation and agricultural purposes.

There is a constant movement by the State Development Commission, the Florida Chamber of Commerce, local chambers of commerce and other groups to bring in industry. Many of the industries which have come into the state in the past 10 years have asked approval of the State Board of Health for their plans for water use and waste treatment facilities prior to building. Sometimes much money is required to install waste treatment facilities and many of the older industries have resisted efforts to educate them to better waste control.

A total of 68 waste treatment plants for industries was approved by the State Board of Health in 1965. Thirty-five of these were coin-operated laundry facilities. Others were for phosphate processing plants, plating mills, abattoirs and meat processing establishments, milk and ice cream plants, printing establishments, car wash installations, citrus processing plants and railroad yards.[21]

While more industry waste treatment plants are being installed every year, the State Board of Health's resources have not kept pace. Every facility needs to be checked from time to time to make certain that it is working properly. It has been impossible to carry out such a program of regular inspection.

## Industrial Pollution and Trouble Spots[22]

The State Board of Health, while handicapped by a shortage of resources to keep up with Florida's expanding economy, has taken corrective actions in many places of the state. These actions were carried on through conferences, persuasion and conciliation but sometimes legal action was necessary.

Some **Duval County** companies, which had been emptying wastes into the Ribault and Cedar Rivers, installed treatment plants, oil separators and sewers to clean up their operations. Another company was informed that its waste needed additional treatment before entering the St. Johns River, and the City of Jacksonville and a few industries were discharging untreated waste into McCoys Creek. Currently the State Board of Health is seeking injunctions against two companies which have unduly delayed action on waste treatment.

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[21] *Op. Cit. Annual Report, 1965*, p. 207.

[22] Appendix B. Report from Vincent D. Patton.

In **Dade County**, a force main was installed which connected the Miami International Airport to the City of Miami sewerage system for the purpose of collecting and transporting wastes from the airport and an industrial area. This main removed wastes which would have gone into the ground near a well field.

In **Putnam County**, a pulp and paper company installed a primary clarifier and is working toward secondary treatment. Another plant has installed new sewers connected to Palatka's sewage treatment plant.

A new plating waste treatment plant has been installed at Cape Kennedy in **Brevard County**. A Naval installation has put in treatment for airplane washing facilities in **Santa Rosa County** and a chemical company has reduced the strength of its wastes through in-plant practices in order to prevent pollution of Escambia Bay.

Two companies in **Escambia County**, which previously were polluting Bayou Chico, have installed treatment plants; another company installed settling basins and a lake to remove solids from its wastes; a fourth company installed two deep disposal wells for strong wastes and is working to reduce contamination of cooling water. A Naval installation is working on a design for treatment of its industrial waste.

The City of Leesburg in **Lake County** has expanded its sewage treatment plant which will treat waste from a citrus concentration operation. Two citrus processing companies in **Orange County** have expanded their treatment facilities and stopped polluting a nearby lake. Prosecution is pending against a third company as a result of its failure to halt pollution.

Many treatment facilities have been installed for small plants, such as laundries and meat packing plants. Several large establishments have installed facilities to treat wastes which would otherwise cause pollution. These are located in Orlando, Bradenton, Hamilton County and West Palm Beach.

## Pollution from Agriculture

Agricultural interests are the largest users of water in Florida. A great amount of water used in raising crops, pastures and groves is not collected and transported to the place of use but falls as rain. It would seem that in an area of abundant rainfall, such as Florida, there would be sufficient moisture, but the vagaries of nature do not always supply rainfall as needed and there are periods of normal, wet and drought years. Therefore, irrigation is becoming increasingly important to supply moisture during dry periods.

The extensive use of phosphate and other inorganic fertilizers, and insecticides, herbicides and pesticides used in spraying or dusting crops and nuisance plants are washed into streams in the same manner as silt where land management is not practiced. When fertilizers and phosphates are washed into streams, they supply food for algae, an aquatic plant which through varying degrees of sunlight can make the oxygen content of the waters fluctuate. Extreme changes in oxygen content can kill many forms of aquatic life. At times, residents along the Peace River have objected to "pollution" which was in reality a large bloom of algae.

Insecticides, herbicides and pesticides are called exotic pollutants and are hard to dissipate in water, sometimes turning up in public water supplies.

Not only are waters of the state polluted from poor land management, but they are also frequently dirtied by wastes from livestock. One cow gives off as much waste material as 16.4 humans. One hog creates as much pollution as 1.9 humans and seven chickens can equal one adult. Farm animals in the United States produce 10 times as much waste as the human population. One rural ditch in South Florida was discovered by County Health Department sanitarians to have wastes six feet deep from a nearby barn.[23]

In one of the largest milk production areas of the state, the County Health Officer of Okeechobee County and his sanitarians did something to circumvent this type of pollution. They worked

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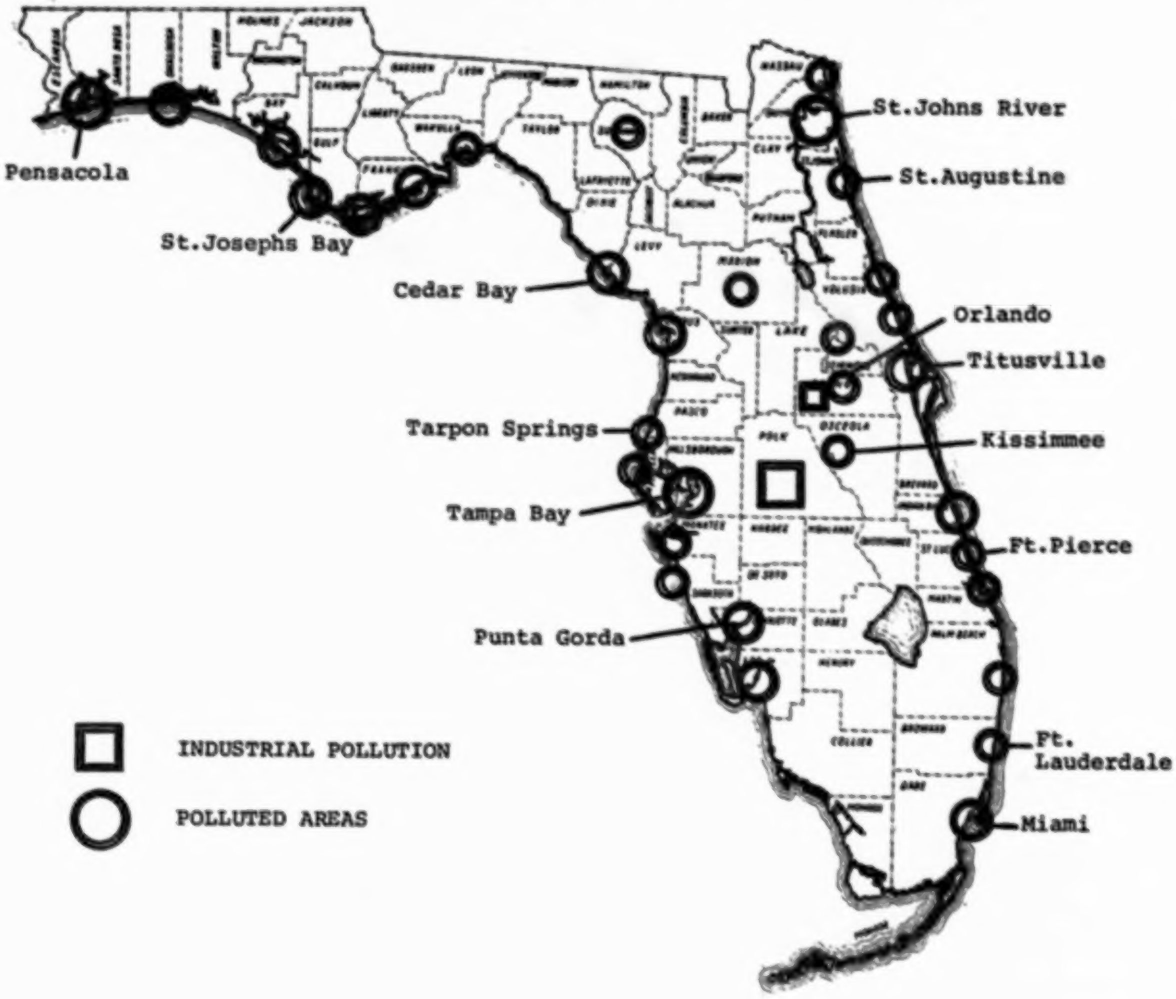
[23] *Op. Cit.* Lee, David B.



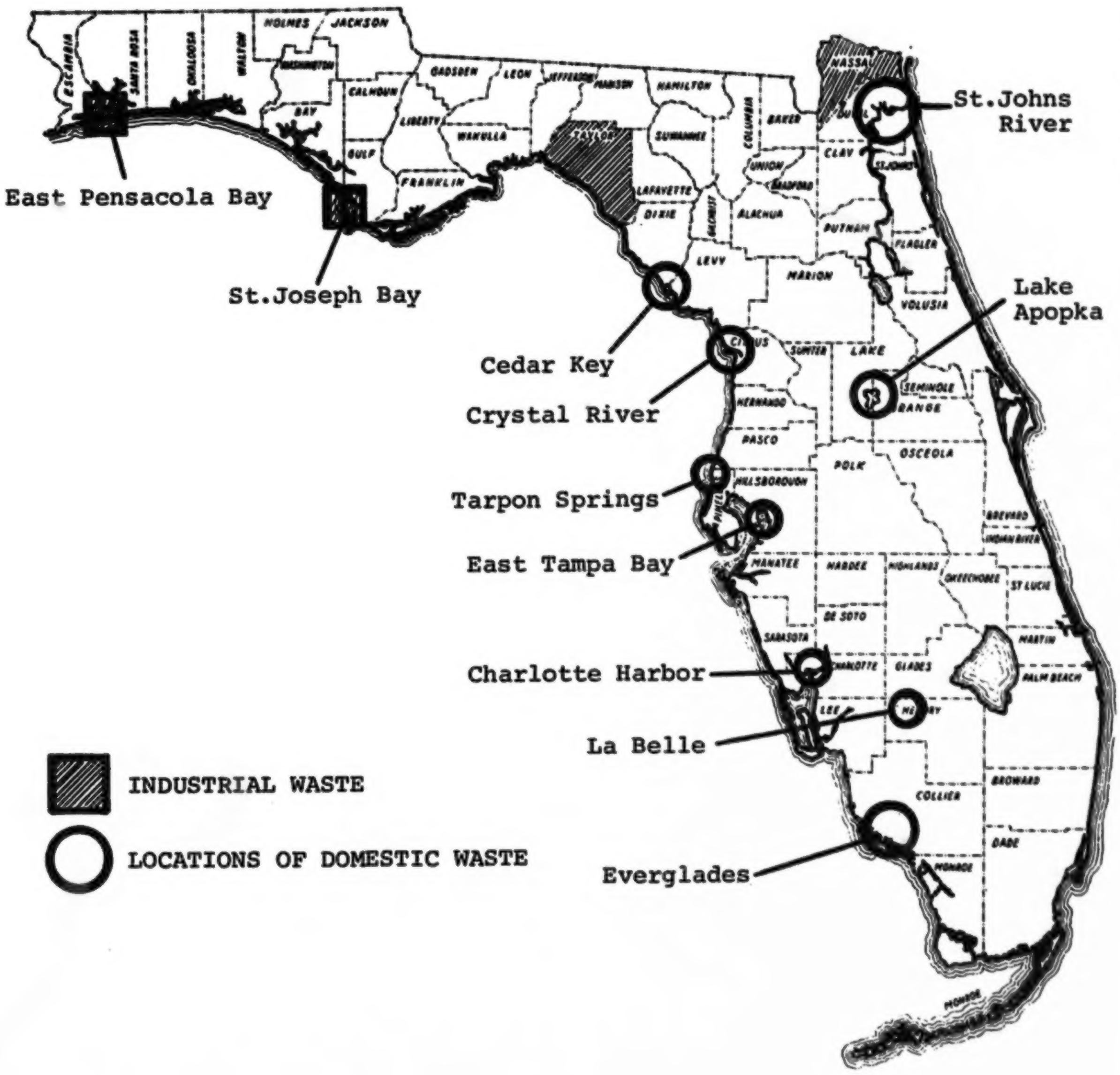
**AREAS OF POLLUTION, FLORIDA 1947**

St.Johns River
St.Augustine
Pensacola
St.Joseph's Bay
Cedar Bay
Orlando
Titusville
Tarpon Springs
Kissimmee
Tampa Bay
Ft.Pierce
Punta Gorda
Ft. Lauderdale
Miami
INDUSTRIAL POLLUTION
POLLUTED AREAS

**Twenty years ago (above), there were few sewage treatment plants and much pollution in Florida. Today, only about five to 10 per cent of the surface waters of Florida have any gross pollution. The waters of Taylor and Nassau Counties (opposite) have been declared by past Legislatures to be industrial rivers.**

out with the dairy farmers and industry a method of salvaging barn wastes in a semi-liquid form and placing this material back on the ground to serve as an organic soil builder and plant food nutrient. At one of the state's largest dairy and beef production farms, special type pits were constructed into which all of the

## AREAS OF POLLUTION, FLORIDA 1967


St.Johns River
East Pensacola Bay
St.Joseph Bay
Lake Apopka
Cedar Key
Crystal River
Tarpon Springs
East Tampa Bay
Charlotte Harbor
La Belle
▨ INDUSTRIAL WASTE
○ LOCATIONS OF DOMESTIC WASTE
Everglades

barn wastes were accumulated. These semi-liquid wastes were then pumped into a mobile tank and transported to the fields for spraying.

Several benefits were derived from this method of barn waste disposal: These wastes were eliminated as a source of pollution of natural waters; a tremendous amount of organic material and

## Lee Received National Water Pollution Control Award

**The director of the Florida State Board of Health's Bureau of Sanitary Engineering, David B. Lee, received the Charles Alvin Emerson Award from the Water Pollution Control Federation on September 29, 1966, in Kansas City, Missouri.**

**The award was made to Mr. Lee for his outstanding service to the Federation and his excellence in the field of public relations and legislation as they relate to water pollution control. In over 34 years of engineering service with the State Board of Health, Mr. Lee has applied his knowledge and administrative ability to water pollution control in Florida and the nation. The award honors the first president of the organization who was a distinguished consulting engineer.**

plant nutrients was salvaged; odors were minimized, preventing a sanitary nuisance; fly and other insect breeding places were eliminated; and a large saving in the cost of fertilizers for pastures was realized.

## State Institutions and Pollution

While the State of Florida has been telling industries and municipalities to control or eliminate their pollution, it is also necessary for the state to look at its own physical plants to make sure that these institutions are not causing pollution. During a survey of the Apalachicola River in June and July 1964, by regional engineers of the State Board of Health, samples collected indicated a concentration of E. coli being discharged from the State Hospital at Chattahoochee.

An investigation was conducted for possible sources of pollution and indications were that the hospital laundry was the contributing factor. To evaluate fully the laundry, a series of samples were collected and field measurements made of the flow from the laundry area and other facilities. It was determined that a combination of flows discharged into the common outfall of the hospital property. This total outfall included the sewage treatment plant discharge and combined laundry and storm sewer lines. Further investigation of the combined lines indicated that the following facilities contributed to the total flow: backwash water from the water plant, excess raw water not used in the water plant, cooling water from the ice plant, blowdown water from the steam plant, and fly ash and dust collection waste water from the steam plant.

Surveys made at sewage treatment plants at other state institutions showed that some of the installations needed:

- tertiary treatment to obtain a higher degree of treatment,
- complete engineering study and evaluation of sewerage systems,
- improved operation and maintenance,
- laboratory equipment provided in order to make analyses recommended by the State Board of Health for better operation,
- BOD incubator,
- connection of sewage treatment plant to city or district sewerage system,
- routine analyses of plant operations,
- treatment of laundry wastes,
- filter renovation,
- enclosed outfall line laid to a primary canal, and
- ownership of plant determined and adequate treatment provided for eliminating the discharge of raw sewage.[24]

Recent federal activities have required the individual states to look at their own programs, improve their facilities and eliminate any unsuitable practices as it is just a matter of time before the Federal Government through the U. S. Department of Interior will be checking these facilities. It would be better for the state to review its own needs, strengths and weaknesses, at all of the state institutions and state-owned sewage treatment facilities than to have the Federal Government point these problems out. Often the weaknesses could be attributed to the practice of slashing allocated budgets for waste treatment facilities prior to construction. Consideration should be given to standardization of new treatment works in line with new and modern technology of waste treatment facilities.[25]

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[24] *Report on State Institutions*, 1966. Bureau of Sanitary Engineering, Florida State Board of Health.

# ACTIVITIES OF THE STATE BOARD OF HEALTH AND COUNTY HEALTH DEPARTMENTS

Each year the State Board of Health, its Bureau of Sanitary Engineering and County Health Departments receive many complaints of odors from streams and ditches, fish kills, polluted lakes and streams and other kinds of annoyances. Many people base their complaints on odor, sight or some other sensory perception and not on a scientific basis. Sometimes they have grounds for their complaints and at other times what they think is pollution may be a natural condition. Frequently, the same people expect "instant enforcement" at no cost to the taxpayers.

Every complaint is investigated by the county or regional sanitary engineer or sanitarian. Perhaps the situation is already known, under investigation and checked out. A written report is submitted by the engineers and recommendations made as to how to correct a pollution situation, if one does exist. Steps are made to alleviate the pollution problem by conferences between the State Board of Health engineers and all the polluters.

The County Health Departments are under the supervision and direction of the State Board of Health and there is a close working relationship between the agencies in the field of water pollution control.

Chapter 154.04 of Florida Statutes reads as follows:

> "Such employees shall devote their entire time to the control of preventable diseases and the education of the public in modern scientific methods of sanitation, hygiene and the con-

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[25] *Baker, Ralph H., Jr.* Letter of Transmittal, *Report on State Institutions*, August 16, 1966. Bureau of Sanitary Engineering, Florida State Board of Health.

trol of communicable diseases in cooperation with and under the supervision of the State Board of Health."[26]

Among other programs, the State Board of Health and County Health Departments are responsible for the prevention of unsafe shellfish being harvested and reaching the consumer. To carry out this program, sanitary quality of growing water areas are determined by the Bureau of Sanitary Engineering with samples of water and shellfish examined by the State Board of Health laboratories. The sanitary inspection of seafood processing establishments and enforcement of sanitary regulations are the routine function of the County Health Department, with the exception of Franklin County which has inspection by a sanitarian attached to the State Board of Health's marine laboratory.

The U. S. Public Health Service annually evaluates the State Board of Health's program to determine to what extent it meets the standard set up by that federal agency. Shellfish growing areas are reappraised biannually to assess new pollution sources or any significant changes on the various watersheds. The control of water pollution is essential to the thriving shellfish and crustacea industries.

## Northeast Florida Region

It is true. Streams that were polluted 20 years ago are polluted today, but stream pollution is not more acute than it was two decades ago. Most of these streams, such as the St. Johns River, will within the next few years improve considerably under the State Board of Health's unrelenting program of surveillance and constant pressure on industries and municipalities.

Twenty years ago there were no adequate sewage treatment plants in the region. Today there are 120 sewage treatment plants serving subdivisions and cities.

There has been less progress in the treating of industrial wastes as compared to providing domestic waste facilities. There are several reasons for this condition: Industries in the past have moved

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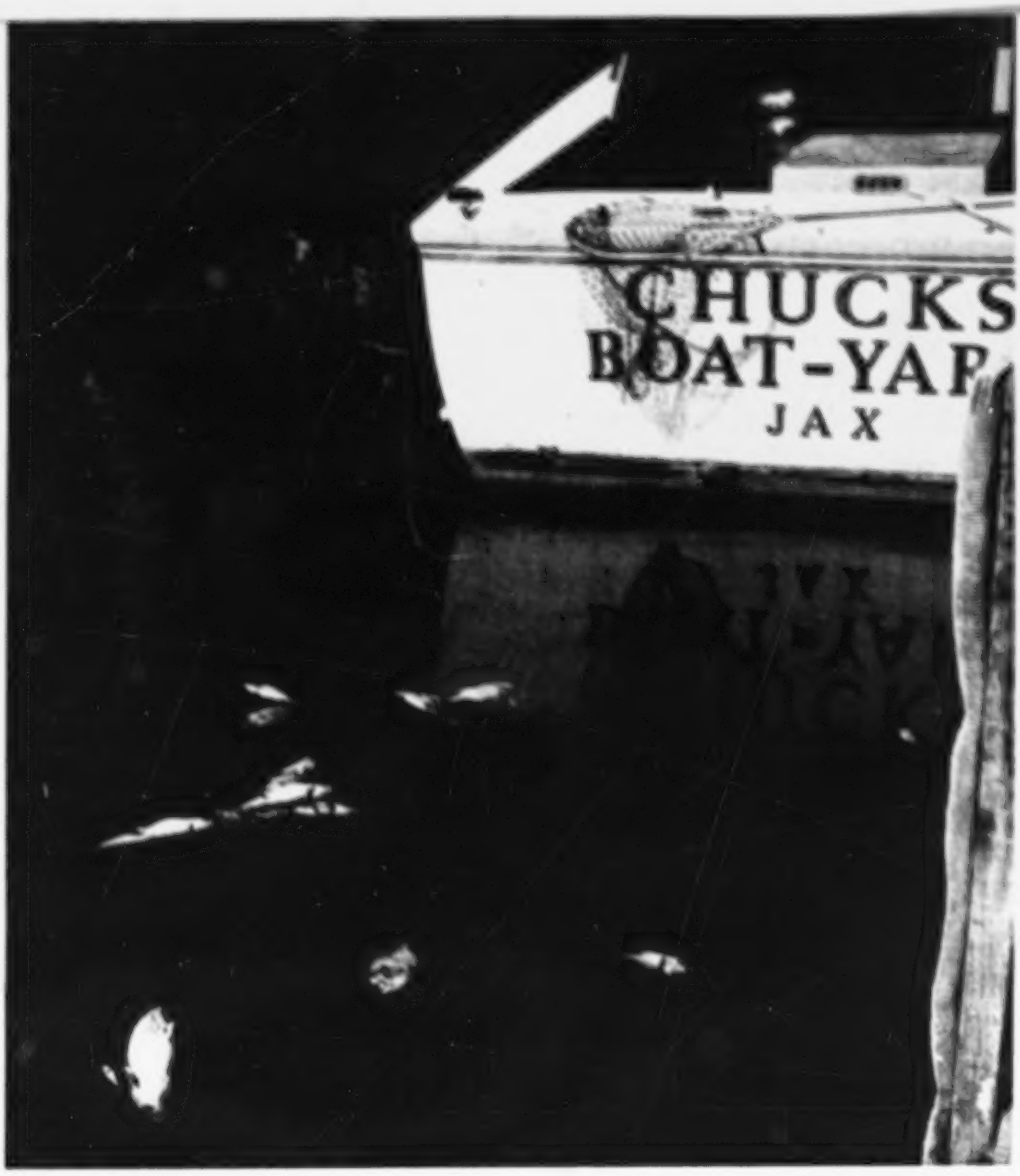
[26] *Florida Statutes*, Chapter 154.04, p. 586.



The State Board of Health investigates every complaint of "fish kill" in the fight to control water pollution. The fish were killed by pollution in Duval County's Cedar Creek on October 13, 1966.

into the region and started production without knowledge of the State Board of Health; other industries have come in and tied into existing sewer lines that discharge untreated wastes into streams; and other industries have come in and provided some treatment devices which were operated for awhile and then bypassed when the facilities were found to be inadequate due to plant expansion or when the cost of operation and expansion of facilities were considered unwarranted by the industry.[27]

## Central Florida Region

Definite progress has been made in the 11 counties of this region in the last 10 to 12 years and particularly in the past five years. At the present only two municipalities in the region are discharging inadequately treated sewage into surface waters. One is Crystal River; however, plans have been approved in this municipality for a secondary treatment facility and financing is the only hurdle to be overcome before construction starts. Cedar Key, the second municipality, is planning toward adequate treatment facilities.

Twenty years ago Imhoff tanks, which gave some sewage treatment, were in operation at Orlando, Ocala, Leesburg and Winter Park. Such a tank is located at Crystal River, but it gives poor treatment. In the past eight years, approximately 30 sewage collection and/or treatment plants were constructed and/or enlarged in the region. Several municipalities, which are presently served by individual septic tanks, have had or are in the process of having engineering reports prepared which could ultimately lead to sewage collection and treatment facilities within the next few years.

The greatest problems are areas outside of municipalities where septic tanks serve large concentrations of populations. Should these areas be annexed by municipalities, where sewage treatment can be provided, or be formed into county sewer districts, the problem would be alleviated. Several hundred small or packaged sewage treatment plants have been installed to serve subdivisions, motels, shopping centers, trailer parks, camps and camp grounds and other types of individual installations.

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[27] Appendix C-1. Report from Nick Mastro.

Although progress has been made in industrial waste disposal in the Central Region, many of the citrus processing plants continue to dump their wastes without treatment. Another threat to surface waters, especially where there are swamps adjacent to open water, is the polluting of water resources by muck farm operations.[28]

## Southwest Florida Region

Fifteen years ago there were only three sewage treatment plants in the area, one municipal plant at Sarasota and two at a military hospital. In the past five years, an average of 65.8 sewerage projects each year were constructed at an average yearly cost of over $2.3 million.

At the present time, two municipalities in the eight-county region are dumping untreated wastes into Florida's streams. They are LaBelle, which is soon to start construction of a sewage treatment plant, and Everglades, which has had plans for a sewage disposal facility but has not begun construction because the City Commission has passed a resolution indicating that it will not build the plant. The State Board of Health has therefore instructed its legal department to initiate appropriate action against Everglades. There have been septic tank failures in Charlotte Harbor and Englewood areas and dumping of raw sewage into the Caloosahatchee River east of Fort Myers.

In the past 15 years, a total of $28.7 million has been spent on domestic sewage facilities in the Southwest Region and over $560,000 on industrial waste treatment. There is much progress in the field of industrial waste because there are fewer installations involved. There are no substitutes available for treatment of industrial waste, such as several septic tanks for sewage treatment plants and the promotion of air and water pollution programs by the State Board of Health and the Federal Government.[29]

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[28] Appendix C-2. Report from G. W. Folke.

[29] Appendix C-3. Report from E. M. Larsen.

## Southeast Florida Region

Water pollution in the agricultural counties of South Florida is a problem because the growing dairy industry has difficulty in disposing of barn wastes. Some progress has been made in the field of municipal waste treatment in Martin, St. Lucie, Indian River and Highlands Counties. A number of outfalls discharging into the Indian River have been removed but there is a continuing use of septic tanks. The problems from citrus processing waste could increase as groves go into production and there is a new problem of sedimentation in the saline estuaries from expanding drainage works.

Package treatment plants have been built in larger installations in the Keys and in many cases effluent from these plants are being reclaimed for irrigation purposes. Tidal flush cesspools are being supplanted by septic tanks with a modified sand filter drainfield. These systems have not been successful because of the bootlegging of local calcite material as sand.

Industrial waste is not a significant problem in the Southeast Florida Region with the exception of laundry wastes. There are still zones of pollution along the shorelines, but the zones need clarification before the sources of pollution can be determined.[30]

## Dade County

In 1950 there were only two or three small sewage treatment plants serving isolated areas of Dade County. Portions of Miami were sewered but the city was discharging wastes into Biscayne Bay and local rivers through 70 sewer outfalls. Through repeated surveys and warnings from the State Board of Health, the voters passed a bond issue which resulted in the removal of the sources of pollution.

Since 1954, there have been 75 sewage treatment plants constructed with sewage collection lines serving the adjoining areas. It is estimated that a permanent population of 564,000 persons is served by public sewerage systems which represent about 46 per cent of the Dade County population.

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[30] Appendix C-4. Report from Richard Starr.

The county and several municipalities have applied for federal grants to install sewage collection systems and transmission mains which will help remove pollution from many areas. There are many difficult problems ahead before a unified sanitary sewerage and disposal system can be constructed to serve the Metropolitan Dade County area. The estimated cost of the first phase of the project envisioned to be completed before 1970 has been set at $100 million.[31]

## Broward County

In 1947, the population of Broward County was 69,000 where today it stands at nearly half a million. The main water pollution threat comes from some 85,000 septic tanks in the county, and because of these the coliform count in the county's tidal canals is higher than desired.

The county has moved into a county utility system aimed at consolidating water and sewer facilities in the unincorporated areas. Fort Lauderdale is planning a master sanitary sewer program which will provide sanitary sewers for all of the city residents as soon as engineering and monies are available. The City of Hollywood is planning a 10,000-foot ocean outfall which will accommodate the present 87,000 population and the 18,000 residents of Hallandale. Pompano Beach possesses an ocean outfall which accommodates all of the citizens of the Pompano Beach Greater Reserve Area.

Today, the Broward County Health Department is responsible for the inspection of 40 public water systems and 65 waste water systems.[32]

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[31] Appendix D-1. Report from R. L. Quick.

[32] Appendix D-2. Report from G. T. Lohmeyer.

## Manatee County

In 1946, the estimated population of Manatee County was 25,000 with one military sewage treatment facility constructed at the airport during World War Two. The capacity of this facility was 15,600 gallons per day. Three municipal sanitary sewer systems were discharging untreated wastes into the Manatee River or Wares Creek.

The first survey was conducted in late 1947 and gross pollution was evident. Since that time, sewage treatment systems were built in Bradenton and Palmetto which have a total design capacity of 4.4 million gallons per day. Out of the other 85 sewage treatment plants in the county, 11 serve subdivisions and the remaining serve commercial establishments, such as trailer parks, shopping centers and restaurants. In addition, there are industrial waste water treatment facilities which serve a milk processing plant and commercial laundries.

A new pollution control program is in operation in the county. Water samples have been collected from Bishop's Harbor to determine the possible effect that discharge from the Borden phosphate complex may have on waters of the area in the future. A routine sampling of Sarasota Bay and monitoring of Ward Lake and the Braden River are maintained as part of the pollution network in the county. Samples of water have been collected and analyzed from wells in the vicinity of the new Borden complex to determine the effect of Borden's gypsum ponds on the underground water supply.[33]

## Hillsborough County

In 1946, Hillsborough had no approved central sewerage system and no approved waste treatment plants. Today, 296,085 persons are served by municipal or private systems and there are 97 sewage treatment plants. Of the three incorporated municipalities, 85 per cent of Tampa is served by sewerage systems; 95 per cent of Temple Terrace; and 80 per cent of Plant City.

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[33] Appendix D-3. Reports from Frank L. Cross, Allen Kretschmar and George Dame, M.D.

Of the 127 schools, which have approximately 100,000 students, only 12 are not on sanitary sewers or have their own approved aerobic sewage treatment plants. Several of the 12 remaining schools on septic tanks will be provided with sewage treatment plants in the near future.

A meat processing plant, which in 1946 was dumping its untreated waste into the Palm River, has been connected to the Tampa sewerage system which alleviates an acute pollution problem. The same company has built a large meat packing plant near Plant City and constructed a waste treatment plant utilizing the latest technological advances.[34]

## Pinellas County

Twenty years ago, the majority of populated areas of Pinellas County was served by municipal and individual septic tanks with some of the cities having sewers only in downtown areas. Since that time 90 per cent of the population of 430,000 has access to sewer systems and public water supplies. The sewage treatment plants and connecting sewers were installed at a cost of $77 million. A big step in putting 90 per cent of the population on sewers was the formation of seven sanitary districts which serve many small communities and subdivisions.

Industrial waste is not a big problem in Pinellas County since the residents are mostly retired families and tourists and the area does not depend upon industry for its economy. Some light industry is present and the major source of industrial waste is from small plating companies.[35]

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[34] Appendix D-4. Report from D. W. Rogers.

[35] Appendix D-5. Report from Harold Leadbetter.

## Palm Beach County

During the past 20 years significant progress has been made in the extension of municipal sewage treatment and the upgrading of new and existing treatment facilities to tertiary treatment or ocean outfall systems.

Progress has been made in Palm Beach County in the curtailment of subdivisions on septic tank systems and discharging of industrial waste. Reported areas of need are countywide planning, expansion of staff and personnel of the County Health Department to meet the growing needs of the county, legal assistance on a county level and the upgrading of privately owned sewerage facilities.[36]

## Water Pollution is a Health Problem

"The mass of population in great conurbations, coupled with ever advancing ideas about hygiene and cleanliness, has made water supply one of the major features of modern civilization."[37]

The public health aspects of water pollution relate to man's drinking water; to his contact with water in recreation and work; to the contamination of food sources, particularly shellfish; and to the breeding of specific insect vectors of disease. These problems of water pollution are the concern of public health and governmental officials.[38]

It was not long ago that water-borne epidemics were commonplace. The scourges of typhoid fever and cholera during the middle and late 1800's in America carried thousands of persons to their death. In parts of the world these diseases, particularly cholera, and also amebiasis, continue rampant today. In the Western Hemisphere, shigellosis, schistosomiasis, leptospirosis, paragoniniasis, dracontiasis and dysentery still continue to take heavy tolls among people using polluted waters for drinking and bathing. Because

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36. Appendix D-6. Report from Lawrence D. Lukin.
37. Macan, T. T. and Worthington, E. B. *Life in Lakes and Rivers.* Collins of London, 1959. p. 237.
38. Appendix E. *Health Aspects of Water Pollution Control.*

of modern methods of sewage disposal and their widespread use, these water-borne bacterial and parasitic diseases are rare or absent from Florida and the United States. As long as there is pollution, however, the danger is never completely absent. Water can be a dangerous substance.

The possibility that certain disease-causing viruses may pass from man to man through the water he uses has received increasing attention during recent years. Water polluted with human waste has played a prominent role in several poliomyelitis epidemics. A relationship between certain epidemics of infectious hepatitis and polluted water seems certain. Similarly, specific outbreaks of inclusion conjunctivitis, herpangina, epidemic myocarditis, epidemic pleurodynia, summer diarrhea and other infectious gastroentritides have been traced to contaminated (polluted) water.

Besides these overt threats to the human health by polluted water, there are also the nuisance factors. Pollution by its nature increases the nutritive elements in water resources. This lends to increased mosquito breeding and larger broods of all species native to the polluted area. This alone would cause increased human discomfort, from such insects as "blind mosquitoes," but also large numbers of mosquitoes are ecologically related to outbreaks of mosquito-borne encephalitis—a real threat to human health and comfort.

Health is not simply the absence of disease or infirmity, but the presence of a sense of well-being. Certainly, polluted water

## WATER-BORNE DISEASES

**Some of the important diseases which can be contracted from polluted waters are: amebiasis, ascariasis, cholera, clonorchiasis (Asiatic liver fluke), inclusion conjunctivitis, diphillobathriasis, dracontiasis, echinacoccosis, fasciclopsiasis, Salmonellosis, infectious hepatitis, leptospirosis, paragonimiasis, paratyphoid fever, pleurodynia, poliomyelitis, schistosomiasis, shigellosis and typhoid and virus.**

does affect the esthetic value of man, to include his desires and needs for recreation which is a major use of Florida's waters.

# STATE BOARD OF HEALTH'S RESOURCE PROBLEMS

## Personnel and Finances

The State Board of Health is admirably equipped in many ways to carry out the job of controlling water pollution. It is a highly capable agency—reported to be one of the best five of its kind in the United States.[39] However, it is having some paralyzing personnel problems.

At the end of 1965, the Bureau of Sanitary Engineering had 31 sanitary engineers and two sanitarians on its staff. There are consistently a number of engineer vacancies which the State Board of Health has been unable to fill because of low salary schedules. As of October 1966, there were 10 open positions. About 75 per cent of the staff spends all or part of its time on stream pollution control.[40] The present methods of fire-fighting operation and of processing plans for sewage treatment and industrial waste plants without adequate follow-up are not operating the water pollution programs in the best interest of the citizens of Florida.

The State Board of Health needs personnel and monies to provide continuing surveillance of some 3000 public works facilities such as air, water and industrial waste. The budget requirements for the State Board of Health to carry out its statutory responsibilities would be less than the loss and replacement of the physical facilities should they be operated and maintained in an inadequate manner.

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[39] Spivak, Johnathan. *Wall Street Journal* (New York), January 19, 1966.

[40] Patton, Vincent D. Unpublished paper presented before the Florida Chapter, American Public Works Association, Sixth Annual Convention, Tampa, Florida, May 5, 1966.

An estimated $250,000 of the Bureau of Sanitary Engineering annual budget is spent on stream pollution activities, with an additional $120,000 per year being supplemented from federal water pollution control sources.

## The Lack of Engineers

The State Board of Health is competing on a nationwide market for sanitary engineers. Recruiters from industry and many areas of government come to Florida and entice our graduates to other states with higher salaries and greater benefits. It is a case of national demand versus national supply and the State Board of Health's personnel files document the recruiting results with such comments:

"I appreciate the consideration . . . however, I have accepted a position elsewhere." D. R. H., applicant from University of Michigan.

"I fully intended to enter public health work of one sort or another . . . but quite frankly, I received an offer from industry that was too good to resist." R. W. G., applicant from Washington University.

"After considering your offer, I have decided not to accept . . ." R. L. D., applicant from West Virginia University.[41]

## Budget Requests

The rapidly increasing population, which will soon exceed six million, and the accompanying industrial growth, requires bold

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[41] Austin, Mark. Unpublished paper, "The Scarce Engineers." Florida State Board of Health. [illegible]

State Board of Health's sanitary engineers check the amount of pollution in a roadside ditch.

action by the State Board of Health and the State Legislature to effectively correct today's pollution problems and to prevent future threats to the state's treasured environmental assets.

To meet the needs of the State Board of Health in this field, it is asking the State Legislature for approximately $5 million for the 1967-69 biennium. About $1.5 million of this amount would be used for anti-pollution programs by County Health Departments. This grant-in-aid program is new and should be a highly effective method for the state to both stimulate local concern for air and water pollution and share in meeting the local financial burdens of operating good control programs on a local level. An additional

$1.5 million in local matching funds would give the program a total sum of $6.5 million.

The State Board of Health is asking for two new attorneys to handle the increasing needs for enforcing the anti-pollution laws. In addition, 45 new positions have been requested for sanitary engineers, chemists, laboratory technicians, biologists, sanitarians and other personnel to bring an end to the pollution the state has now and prevent future pollution.

## Legal Aspects of Water Pollution

Many people who complain about pollution say, "Let's pass a law . . ." and expect that this will end the pollution problems.

Florida now has adequate laws to control pollution and only minor changes are needed to make these laws most satisfactory. The State Board of Health needs a more strongly implemented water pollution control program to control and protect all legitimate users of water resources. Equitable use of water resources should be determined by professional engineers so that tourism, agriculture, industry and conservation interests may use the total environmental resources of the state.

The State Board of Health lacks the legal staff to adequately enforce the laws on the books. Enforcement is deficient because resources are not available for proper surveillance of domestic and industrial waste disposal facilities nor to provide the legal and scientific staffs to put the programs into full effect.

There are two areas of the state which have been removed from the juridiction of the Stae Board of Health by special acts of the Florida Legislature.[49] By these acts, Nassau and Taylor Counties were declared to be industrial counties and the acts state that it is in the interest of the public that industry be empowered to discharge industrial and chemical wastes into the tidal waters of Nassau County and into the Fenholloway River and the Gulf of Mexico into which the Fenholloway flows from Taylor County.

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[49] Florida Special Acts [illegible], c. [illegible]; Florida Special Acts [illegible], c. [illegible].

> "If attacked, the legislation might be held unconstitutional on the grounds that it deprives the riparian owners on these waters of property rights without compensation in violation of the state and federal constitution."[43]

## Legal Action by the State Board of Health

Below are some of the more than 62 legal actions taken by the State Board of Health on behalf of the citizens of Florida since 1958 in relation to water pollution control. Some of the cases are still pending; others were dismissed because of lack of conclusive evidence or because of a release by another agency; other cases were not pressed because the situations had been corrected; or the county solicitor did not press the case.

### State of Florida ex rel Sowder vs. American Cyanamid Company

Stream pollution of Turkey Creek, Alafia River and Lithania Springs occurred on February 5, 1965. A dike adjacent to waters of the State of Florida ruptured discharging over 35 million cubic feet of water containing phosphate waste. DISPOSITION: Injunction suit sought March 4, 1965, by State Board of Health to require control of company facilities adjacent to state waters. This case dismissed by Circuit Court on basis of a release by director of Florida Game and Fresh Water Fish Commission. Damages of $20,000 were paid to the Commission by the company on March 12, 1965.

### State Board of Health vs. V-C Chemical Company, a division of Socony Mobil Oil Company, Inc.

Stream pollution of Peace River occurred on October 26, 1964. Company negligently maintained a wooden overflow structure in slime pond. It collapsed and two to five "acre feet" of phosphate slime were released into the Peace River. DISPOSITION: Referred to Polk County Solicitor on January 29, 1965; Solicitor advised

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[43] Op. Cit. *Florida's Water Resources*, pp. 5-6.

State Board of Health that "prosecution not justified" on January 13, 1966.

**State Board of Health ex rel Sowder vs. Container Wire Products Company**

Water pollution occurred on Ribault River and Cedar Creek in Duval County. Company has failed to meet approval of State Board of Health for waste treatment pursuant to orders of the agency of September 14, 1966. Suit filed by agency on September 16, 1966, requesting injunction to hold up operation until treatment devices are built.

**State Board of Health vs. Sloan Rental, Inc.**

Criminal action was taken against this development of eight rental units at Tavernier in the Keys. Developer was utilizing dynamited holes in coral for discharge of human wastes. Under direction of legal staff, dye tests indicated pollution into tidal waters surrounding this Key. After extended period of time, the Court found the defendant corporation and its president guilty, giving him 30 days to remove the rental units, which consisted of 16 X 16 foot plywood shacks. Removal was effected and case closed.

**State Board of Health vs. Lovering and Cranfield**

Case taken before County Judge's Court in 1961 in Manatee County involved a chicken canning plant north of Palmetto. Unapproved waste treatment with holding ponds was adjacent to McMullin Creek, a tributary of Terra Ceda Bay tidal basin. Samples taken under the direction of State Board of Health attorney indicated salmonella present in holding basin and adjacent tidal waters. The company was ordered to close down, which resulted in termination of a $50,000 government contract on canned chicken for the U. S. Army and subsequent bankruptcy of the company. The company has reorganized and is currently in operation utilizing approved facilities and has recovered its previous losses.

## Are We Willing to Pay for What We Want?

Only about five to 10 per cent of Florida's waters are polluted but more streams, lakes and springs will become "dirty waters" unless the State Board of Health is given the additional resources to control pollution.

Howard W. Chapman, associate regional health director for environmental health services of the U. S. Public Health Service, states that Florida needs a "... minimum staff of 58 persons, but a staff of 93 persons for its water pollution control program would be more desirable. To support this staff, a minimum annual budget of $528,000 would be required, and a desirable budget of $847,000. Florida's present staff and budget is less than one-half of the minimum recommended." These figures do not reflect the 356 environmental health personnel of the County Health Departments who are involved in local program nor local budgets.

Mr. Chapman further said that the State Board of Health has done an excellent job in obtaining treatment of wastes from municipalities. The statistics on the number of municipal waste treatment plants built in Florida during the last few years are impressive. Between 1961 and 1965, 1003 separate treatment plants were approved for construction. No state in the southeast region of the United States, and only a few nationally, have had the rate of population growth and urban expansion, with its accompanying municipal waste problems, as has Florida.

The State Board of Health has an effective water pollution control program which has done much to control or minimize pollution in the state. To cope with the pollution problems associated with the population growth, urban and industrial expansion, the following is needed by the State Board of Health:

- Strong legislation providing all the consolidated authority to do a complete job;
- Adequate budget and staff, and
- Long range planning for water pollution control to be initiated which includes a comprehensive approach for stream studies and abatement of pollution from all municipalities and industries.[44]

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[44] Appendix E. Howard W. Chapman's letter.

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# APPENDIX A

(1) Letter from Ray L. Wilson, Attorney, Jacksonville, Florida, to Wilson T. Sowder, M.D., Florida State Health Officer.

(2) Letter from Wilson T. Sowder, M.D., Florida State Health Officer to Ray L. Wilson.

## APPENDIX A (1)

Law Office of
RAY L. WILSON

Telephone 355-1155
(Area Code 904)

BARNETT NATIONAL BANK BUILDING
JACKSONVILLE, FLORIDA 32202

August 5, 1966

Dr. Wilson T. Sowder
State Health Officer
State Board of Health
Jacksonville, Florida

Dear Dr. Sowder:

I notice in today's press that you plan to make a strong bid for an appropriation of $5,000,000.00 to aid the Board's efforts in improving the quality of the State's air and water resources.

I have not investigated, verified, nor validated the common knowledge around Duval County that the Municipality of Jacksonville and others dump several million gallons of raw sewage per day into the St. Johns River. However, if that is true, and if it is, the State Board of Health should know it. I don't understand why you do not take advantage of Section 387.08 of the Florida Statutes and endeavor to eliminate the portion of water pollution mentioned here.

I would like to hear from you regarding this matter.

Very truly yours,

RAY L. WILSON

## APPENDIX A (2)

FLORIDA STATE BOARD OF HEALTH
Wilson T. Sowder, M.D., M.P.H., State Health Officer
Malcom J. Ford, M.D., M.P.H., Deputy State Health Officer
Jacksonville, 32201

August 15, 1966

Mr. Ray L. Wilson
Attorney at Law
Barnett National Bank Building
Jacksonville, Florida 32202

Dear Mr. Wilson:

Further reference is made to your letter of August 6th about raw sewage being dumped into the St. Johns River by the City of Jacksonville and asking why the State Board of Health does not take advantage of Section 387.08 and endeavor to eliminate the water pollution involved. I have now had an opportunity to discuss this matter with Mr. David B. Lee, Director of our Bureau of Sanitary Engineering; and we both have had an opportunity to review our files and refresh our minds on this important subject. I am answering your question in some detail because it is an important one. Furthermore, the State Board of Health itself has for several years been responsible for letting all concerned know that this is the most outstanding example of water pollution in the whole state.

The Florida State Board of Health has, especially during the past 20 years, worked very diligently throughout the state to prevent pollution and preserve the water resources for the protection of the health of the people as well as for the value of these waters for fishing, recreation, and other purposes; and has worked primarily through its Bureau of Sanitary Engineering under the able direction of Mr. David B. Lee. It is well known throughout the country that the Florida State Board of Health and the staff of the Bureau of Sanitary Engineering under Mr. Lee's direction have done outstanding work in this field. Concrete evidence of this is contained in one of the enclosures indicating Mr. Lee's selection for a National Award for his outstanding work in this field. I request that you not give any publicity to this until the organization involved has made the formal presentation next month.

The fact that the people of the State of Florida are now aware of the problem of pollution is due primarily to these vigorous efforts of the Florida State Board of Health during the past 20 years. During that time and as a result of this effort a total of 1,550 sewage treatment plants have been built and the spread of water pollution has been halted in spite of rapidly increasing industrial developments and the rapid growth of the population. It is, of course, true that we still have many difficult problems ahead of us which that in Jacksonville is an outstanding example. However, the larger percentage of the waters of the state, including the rivers, lakes, and beaches, are not polluted and probably less than five to 10 per cent of the waters of the state have any gross pollution. These facts are important, and related to your question in that they put the Jacksonville problem in proper perspective.

The Florida State Board of Health and the United States Public Health Service made an extensive pollution survey of the St. Johns River during the late 40's and a copy of this report was furnished the City of Jacksonville. The State Board of Health has continued since then to exert pressure upon the city as well as the rapidly growing area surrounding Jacksonville, and we know we have accomplished a great deal. As you know, today we have more population in the suburban area surrounding Jacksonville than we do within the corporate limits, and our agency has been successful in bringing about the construction of some eighty large treatment plants in the county to prevent further pollution of the St. Johns River. It has been the firm policy of the State Board of Health for many years to prevent any further degradation of the rivers and lakes of the state.

The City of Jacksonville in 1953 retained Dr. Abel Wolman of Johns Hopkins University, a consulting engineer with a national, and even an international reputation, in the field of water pollution. After his survey, he made a report stating that the city did not need waste treatment for many years in the future.

Doctor Wolman was also retained as the consulting engineer by the City of Sanford; and, in his report of June 1, 1953, he also stated that Lake Monroe could assimilate all sewage from the city. Even working against the handicap of such opinions, we are happy to say that Sanford now has a fine sewage treatment plant, and we are hopeful that it will upgrade this to secondary treatment in the near future.

Doctor Wolman has for many years been an outstanding advocate of the cliché that "the solution to pollution is dilution." If this view of the disposal of raw sewage were valid anywhere in Florida, it naturally would be here in Jacksonville where we have the largest volume of moving water available anywhere in the state.

On September 28, 1955, the consulting engineering firm of Metcalf & Eddy from Boston, Massachusetts, filed their report and recommendations for a master plan covering the Jacksonville-Duval area. This report also stated that "the substantial elimination of the discharge of untreated sewage from the City of Jacksonville into the St. Johns River and its tributaries would not be needed until the fourth stage of the program." They also listed the costs of the various phases, and the total was $109,600,000, a sizeable sum of money. About that time the State Board of Health had been requested by the city to approve the sewering of northwest Jacksonville, the unsewered portion of the city, and to pipe this waste into the river at the Main Street Bridge untreated.

In spite of the opinions from these distinguished sources, the State Board of Health and its Bureau of Sanitary Engineering has steadfastly rejected these proposed solutions to the problem. On November 1, 1955, the State Health Officer notified the city that we would not approve this plan and that the State Board of Health would use all legal means to prevent any further degradation of the river. Thereupon, the city directed its engineers to plan a sewage treatment plant for the first phase of the master plan; and, on December 15, 1955, the consulting engineers submitted their preliminary report which was approved in principle by the State Health Department.

The city proceeded on this first stage operation and on December 12, 1961, the City of Jacksonville dedicated its first sewage treatment plant located on Tallyrand Avenue. This is a very fine plant and has received the award of the State Board of Health several times for good operation. I am attaching a copy of the dedication brochure for your information.

Since that time, the board has worked with city officials and the city now has under active development a program, up-dating the Metcalf & Eddy report to eliminate raw sewage and industrial waste flowing into its tributaries as the first project of the first phase. You may have observed in recent newspaper articles that the Housing & Urban Development Agency has reserved $672,000 as a grant in aid to the city for this program. This will eliminate raw sewage and other deleterious materials in McCoy Creek. Other projects in this program are in the planning stages. Phase 3 will include the St. Johns River trunk sewer and the South Jacksonville trunk sewer. A rough estimate of the cost of this program is in the neighborhood of $25-$30 million. We are confident that the city will continue their implementation of this plan.

With the above information as a background, I shall now try to answer your specific question. It has not seemed to us here at the State Board of Health that section 387.08 of the law which provides for a fine of up to $500 for violations was likely to be very effective in dealing with Florida's second largest city in connection with potential expenditures of over $100,000,000. Also, I have already called your attention to the fact that the city has had available outstanding expert advice contrary to the position which the State Board of Health has consistently taken. We believe that such testimony would have made it somewhat difficult for the State Board of Health to win a case in court. And last of all, the State Board of Health has never had an adequate legal staff to develop and follow through the courts on a strictly law enforcement basis the many cases that could be made. We are, incidentally, asking the next legislature to provide funds for substantial increases in our legal staff. We have also been conscious of the fact that where such large sums of money have to be spent to solve a problem, these can only be provided by interested and willing taxpayers. We have believed, therefore, that our long-term campaign of educating the public as to the need for the prevention and abatement of water pollution would provide the best assurances of appropriate remedial measures being taken.

We appreciate your interest in the environmental problems of this area of Florida, and we hope we can enlist your support in our efforts to provide adequate technical resources in the job needed ahead. This, of course, means adequate manpower, housing, laboratory facilities and equipment as well as adequate salary schedules for engineers and scientists.

If I can furnish you with any further information, please let me know.

Sincerely,

Wilson T. Sowder, M.D.
State Health Officer

# APPENDIX B

Report from Vincent D. Patton, director of Division of Industrial Waste, Bureau of Sanitary Engineering, Florida State Board of Health.

## APPENDIX B

September 6, 1966

To: Mr. David B. Lee

From: Vincent D. Patton

Subject: Health Notes—Water Pollution Issue

Reference the attached memorandum from Mr. Schoonover, we are furnishing a list of spots where corrective action has been taken as well as needs for additional action.

**Duval County**

**St. Johns River**

Alton Box Board Company—Has been informed that additional waste treatment will be required.

**Ribault River**

Gold Merit Packing Co.—Installed treatment plant.
Glidden Company—Installed an oil separator and sewers —working on the next phase.

The other companies (Container Wire and Wootton Fiber) are still delaying. These have been referred to Dr. Sowder for possible legal action.

**Cedar River**

Allied Petro-Products, Inc.—Installed an oil separator.
Seaboard Airline Railroad—Installed two oil separators.
Painters Poultry—Installed treatment facility.

**McCoys Creek**

City of Jacksonville and others discharging untreated waste.

**Dade County**

Miami International Airport—Force main installed which connected to the City of Miami system to collect and transport waste from the airport and industrial area immediately east of the airport. This removed waste which could have gone into the ground in the vicinity of the well field.

**Putnam County**

Hudson Pulp and Paper Company—Installed primary clarifier. Working toward secondary treatment.

Southland Packing Company—Installed new sewers to pipe their waste to Palatka's sewage treatment plant.

**Brevard County**

Cape Kennedy—New plating waste treatment plant being installed.

**Santa Rosa County**

Navy installation put in treatment for airplane washing facility. Escambia Chemical Corporation—Reduced the strength of its waste through in-plant practices so as not to affect Escambia Bay.

**Escambia County**

Newport Industries—Installed a treatment plant.

Armstrong Cork Co.—Installed treatment plant. Both of these companies had polluted Bayou Chico with wood waste.

St. Regis Paper Company—Installed settling basins and a lake to remove solids from the waste and provide some treatment.

Pensacola Navy Base—Working on design for treatment of their industrial waste.

Chemstrand Corp.—Installed two deep disposal wells for strong waste. Working to reduce contamination of cooling water.

**Lake County**

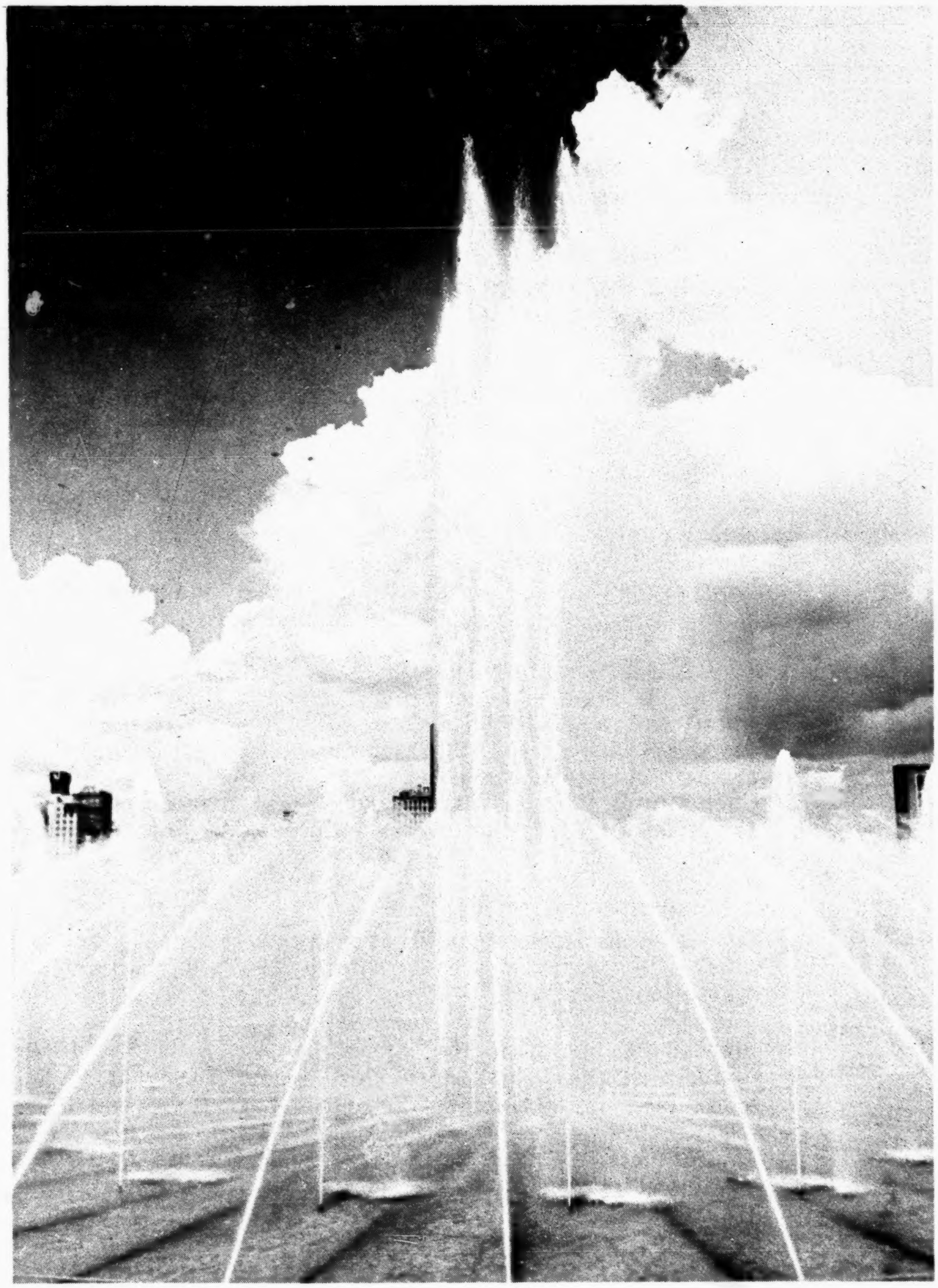
City of Leesburg is expanding its sewage treatment plant which will treat waste from Minute Maid's citrus concentration operation.

**Orange County**

Plymouth Citrus and Minute Maid expanded their treatment facilities and stopped polluting the lake which was nearby

Winter Garden Citrus—This has been referred to Dr. Sowder for prosecution.

Many treatment plants have been installed for small plants such as laundries, meat packing plants, etc. Several large plants have been installed to treat the wastes which would otherwise cause pollution. This would include industrial giants such as Martin Company, Orlando; Borden Company, Bradenton; Occidental, Hamilton County; Pratt & Whitney, West Palm Beach.



Clean water has many uses, including such esthetic pleasures as provided by Jacksonville's Friendship Fountain.

# APPENDIX C

## Reports from regional sanitary engineers

(1) Report from Nick Mastro, Northeast Florida Regional Office

(2) Report from G. W. Folke, Central Florida Regional Office

(3) Report from E. M. Larsen, Southwest Florida Regional Office

(4) Report from Richard Starr, Southeast Florida Regional Office.

(5) Report from K. K. Huffstutler, director of Polk-Hillsborough Air Pollution Control Distirct, Winter Haven

## APPENDIX C-1

August 30, 1966

**TO:** David B. Lee

**FROM:** Nick Mastro

**SUBJECT:** Forthcoming Issue of Health Notes

In reviewing the activities of this office over the past 20 years in regard to "Stream Pollution," there are several factors to consider, this being the great influx of people to the State of Florida and along with this, the increase of industrial plants.

My personal reaction to this question is that overall we have done a tremendous task of controlling the pollution of our streams under adverse conditions. These conditions are being understaffed and somewhat without any legal or political support from those in position to assist us.

In my opinion, the stream pollution is not more acute now than it was 20 years ago. It's true that there are streams that were polluted 20 years ago and are polluted today. Most of these, such as the St. Johns River, will within the next few years improve considerably, partly because of our unrelenting program of surveillance and of constantly pressuring the parties concerned into providing the necessary treatment facilities.

Today we have approximately 120 sewage treatment plants serving subdivisions and cities in this region. Twenty years ago there was no adequate sewage treatment plant in existence in this region.

Insofar as treating waste from our industrial plants, it must be admitted that in this area we have not progressed as well as in providing domestic waste facilities. There are several reasons for this; first, industries in the past have moved into this area and started production without our knowledge; others have come in and tied onto exisiting sewer lines that discharged untreated waste to our streams; and then too, others have come in and provided some treatment devices which were operated for awhile and then bypassed when found inadequate due to plant expansion or when the cost of operation and expansion of facilities were found to be, in their opinion, unwarranted.

The fact that stream pollution has been brought to the public's attention through news media, the Federal Government's action, etc., would make the average citizen more cognizant and aware of pollution today. This, of course, is what we've been trying to do since as long as I can remember. Now that it's the topic of conversation, we have been criticized for what we haven't done. What we have done with what manpower and assistance that has been made available to us, the average citizen and news media are uninformed about. I don't know that we should have to defend our position, but I do feel all the facts should be made known and let the public think for themselves.

I definitely do not think we have gone backwards. At the same time, with adequate implementation of our programs, we certainly could have moved faster and corrected many problems that face us today that have been around for quite some time. None of this is news to you, but, nevertheless, it does summarize what has transpired in this field as far as I am concerned.

With the emphasis that the Federal Government has placed on stream pollution, I think that the state legislature, the local governments and even our own State Board of Health will be inclined to support us even more than they have in the past. We know what the problems are and in the majority of cases know the cure. We do need to be recognized and given whatever the assistance needed to expedite and correct these problems and any that might arise in the future.

## APPENDIX C-2

August 29, 1966

**MEMORANDUM**

TO: Mr. David B. Lee

FROM: G. W. Folke

SUBJECT: **Forthcoming Issue of Health Notes, Entitled "Water Pollution"**

We are in receipt of a copy of your memorandum under date of August 24, 1966, with regard to the subject and we would offer the following comments:

Speaking for the Central Florida Region, the writer feels that definite progress has been made in the field of water pollution control over the last ten to twelve years and particularly in the last five years, and especially in the field of sewage treatment. At the present time I know of only two municipalities in the eleven counties of the Region which discharge inadequately treated sewage to surface waters. One of these is the Town of Crystal River and, as you know, we have approved plans for secondary treatment for this community and financing is the only hurdle to be overcome in order that construction may start. The other is the Town of Cedar Key and this community is also working toward adequate treatment facilities.

I am not too familiar with the exact dates that older treatment plants were constructed but I would imagine that in 1947 there were possibly only two treatment facilities outside of septic tanks in operation in this Region. One of them would be the existing Imhoff tank at Crystal River and possibly the other would be the original intermediate plant at Daytona Beach.

The writer has been in this Region since August 1, 1958, and since that time the following municipal facilities have been constructed or expanded. I am sure that many of the facilities constructed in the last eight years got their impetus from Mr. Berkowitz and personnel from the Jacksonville office:

**Orange County**

1. Southwest Orange County sewage treatment plant modified to treat additional flows.
2. Northwest Orange County plant (Pine Hills) enlarged.
3. The City of Maitland sewage collection system and treatment plant constructed.
4. I do not have the necessary records in this office but I believe the City of Apopka and City of Winter Garden treatment plants were expanded.
5. City of Winter Park sewage treatment plant is presently being expanded.
6. City of Orlando No. 2 sewage treatment plant constructed.

**Seminole County**

1. City of Sanford Plant constructed.

**Osceola County**

1. City of St. Cloud provided additional capacity and secondary treatment, whereas the original plant provided primary treatment only.
2. City of Kissimmee. Plant expansion presently under construction.

**Volusia County**

1. City of Ormond Beach constructed sewage collection and treatment facilities.
2. City of Holly Hill constructed sewage collection and treatment facilities.
3. City of Daytona Beach constructed first phase of new sewage treatment plant to provide secondary treatment instead of primary treatment as previously constructed. Plans have been approved for the second phase of construction to double capacity of this plant.
4. City of Port Orange constructed sewage collection system and treatment plant.
5. City of New Smyrna Beach constructed sewage collection system and treatment plant.
6. City of Edgewater constructed sewage collection system and treatment plant.
7. City of Deland constructed plant expansion to provide secondary treatment whereas primary treatment was previously practiced.

**Lake County**

1. City of Mt. Dora constructed sewage collection and treatment plant.
2. City of Eustis constructed plant expansion which doubled capacity of their secondary treatment plant.
3. City of Leesburg plant presently under construction to provide secondary treatment whereas primary treatment is presently practiced. This new plant will also treat waste waters from the Minute Maid citrus processing plant.
4. City of Umatilla sewage treatment plant recently completed.

**Marion County**

1. City of Belleview sewage collection and treatment facilities constructed.
2. City of Dunnellon sewage collection and treatment facilities constructed.
3. City of Ocala planning is presently underway for sewage collection and treatment for a large area recently annexed to the City.

**Sumter County**

1. City of Wildwood sewage treatment plant and additional sewers constructed.

**Pasco County**

1. City of New Port Richey sewage collection and treatment facilities constructed.
2. City of Zephyrhills. Final construction plans for sewage collection and treatment are presently being prepared as result of a successful referendum for the project.

**Hernando County**

1. City of Brooksville sewage treatment plant constructed. Plans are presently being prepared for expansion of the sewage treatment plant and plans for some sewer extensions have been approved.

**Citrus County**

1. City of Inverness. Sewage collection and treatment facilities constructed.
2. Town of Crystal River. Plans have been approved for a sewage treatment plant to provide secondary treatment and financing is presently being worked out.

**Levy County**

1. City of Williston had a sewage treatment plant prior to the writer's entry into the Central Florida Region.

Several municipalities, which are presently served by individual septic tank installations, have had and are in the process of having prepared engineering reports relative to sewerage. Undoubtedly within the next few years sewage collection and treatment facilities will be forthcoming in many of these communities.

In the opinion of the writer, our greatest gray area relative to sewage collection and treatment is in areas outside of municipalities where County Commissions and County Health Departments have permitted heavy concentrations of population to be served by individual septic tank, and tile drainfield installations. Our only salvation in these areas is that they be annexed to municipalities where sewerage can be provided or county sewer districts must be formed to provide the necessary service. This problem gets back to our old "preaching mission" that we must have good sound planning and zoning in these areas.

In addition to the municipal sewage treatment plants, we have had several hundred sewage treatment plants installed to serve subdivisions, hotels, motels, shopping centers, trailer parks, camps and camp grounds, and other types of individual installations. The majority of these installations have been made within the past ten years.

With regard to industrial wastes, I believe that we have made good progress in securing adequate treatment in new developments. Here, one of our gray areas appears to be in the citrus processing industry. From what I have seen in this Region, most of the industry is content to dump their wastes without treatment.

Another definite threat that I see to our surface waters, especially in areas where there is considerable swampland adjacent to the open waters, is the installation of muck farm operations. This is an item that is going to have to be resolved by the State Board of Health and agricultural interests.

I realize this is not in capsule form as requested, but it is felt that the foregoing information is pertinent. If you desire any further information or opinions, kindly advise.

## APPENDIX C-3

August 31, 1966

**TO:** Mr. David B. Lee

**FROM:** E. M. Larsen

**SUBJECT:** General Strm. Pol.
**Forthcoming Issue of Health Notes,**
**Entitled "Water Pollution"**

This memorandum and attachments are to conform to your request in a memorandum dated August 24, 1966 bearing the above subject matter.

**THE PAST**—Please refer to Chart No. 1, attached, which indicates planned expenditure on plans approved by our agency covering sewerage and industrial waste projects from 1951-1965. At the time of my employment in July, 1951 there existed only three sewage plants in the southwest region. One of these was the City of Sarasota plant, which was completed in early 1951. The other two plants were those located at the G. Pierce Wood Memorial Hospitals located in Arcadia. These were built apparently by the army during World War I or II.

The sewage program in southwest Florida really got under way during 1955 when more than two million dollars was spent. Since 1955 through 1965, dollar volume has varied considerably. The average spent, based on a fifteen year average, was over 1.9 million; the average for the last ten years has been over 2.6 million; and the average the last five years has been over 2.3 million dollars. The number of sewage projects has averaged 35.8 the last fifteen years and has reached an average of 65.8 projects in the last five years.

The industrial waste program is also expanding and developing in this area. Please refer to chart for details.

**PRESENT CONDITIONS**—Please refer to chart No. 2 indicating the number of sewage plants and type. Since 1950 this area has gone from two sewage plants to 140 as of this date. We are now in the throes of needing plant expansions at some of these plants. The trickling filter plants that are overloaded are: The City of Sarasota, Kensington Park Subdivision in Sarasota County, and the Punta Gorda Plant in Charlotte County. Sarasota has hired an engineer to develop plans for expansion, Kensington Park has had plans approved for expansion but has refused so far to commence with the construction, and Punta Gorda has not so far done a thing.

The air plants that are overloaded are Naples, which has a construction expansion program under way; and the South Gate Plant in Sarasota County has expansion plans approved, but construction has not commenced.

At the present time we have only two municipalities that are dumping raw, untreated waste into our streams. They are: La Belle, which has had plans approved, and construction should commence sometime during late 1966 or early 1967; and the City of Everglades, with plans approved, but the City Commission has passed a resolution indicating that they will not build the plant. We are experiencing also some sewage problems from septic tank failures in various areas of my Region, and one of these is the Charlotte Harbor area, and the other is the Englewood area. These areas are organized into the Englewood Sanitary District and the Charlotte Harbor Association. These organizations are in the water supply business at the present time, which should assist us in getting sewers and sewage treatment in these sections in the future. In the Russell Park area east of Ft. Myers we have some dumping of sewage in the Caloosahatchee River, and I do strongly believe that we have a pollution problem through storm drains from the City of Moore Haven, but have no documentary evidence.

In the field of industrial waste we have several problems. One of these problems is the discharge of waste from the Gulf Naval Stores, Nocatee, Florida, into Peace River; the other industrial waste problem we have is in the Hendry and Glades counties regarding sugar waste, and citrus waste discharge at Arcadia. (Bradenton also has a citrus waste discharge.)

**POSSIBLE FUTURE CONDITION**—It is felt that our sewage program will proceed year by year at the rate of at least two million dollars per year, and our Industrial Waste program should continue at the rate of approximately $75,000 per year. This area I do believe needs legal assistance, and very likely legal action to solve some of its problems in the field of stream pollution and potable drinking water. The communities involved are the City of Everglades and Moore Haven. We have tried using education, discussion, persuasion, conciliation, etc., but these two communities hold an open defiance to the State Board of Health, and possibly any other controls outside their communities. You, Mr. Baker and Mr. Miller are independently, or collectively, familiar with these two problems. The matter of sewage treatment processes being built for motels, trailer parks, hotels, etc., does not constitute a problem at all due to the Sanitary Code requirements. Developing subdivision developments with septic tanks, will continue to be a problem and will effect the future in this field unless we take definite steps, refortifying our controls over the installation of septic tanks in subdivisions. In areas where we have open defiance, like the City of Everglades, we will run into trouble unless we take legal action to get compliance. During my early years in the region we were happy to obtain almost any degree of treatment of our sanitary waste, such as primary treatment only. Today our thoughts have changed in that we are now expecting at least 95-98% removal, but will accept nothing less than 80-85%. Even with the 80-85% it is doubtful whether it would be approved without ponds, which give us a better degree of treatment. As can be seen from Table 2, more than 77% of the sewage plants in this area have a degree of treatment of 93-99%.

Recent additional personnel will assist greatly in the field of operation and expansion programs. It is felt that the present staff is still inadequate when you realize that we have 140 sewage plants, many laundry plants, a large number of water treatment facilities and an expanding number of incinerators. Mr. Vincent Patton has written a large number of letters to the laundry plants in this area indicating inadequate treatment and/or operation of the laundry treatment facilities. This problem will become much more severe unless we tighten up to a point where we do not permit laundry plants to be installed unless they are connected to a sanitary sewer.

**SUMMARY**—It is my feeling that we have made a great deal of progress in this area as can be seen by the fact that over 28.7 million dollars has been spent on sewage facilities in this area and over $560,000 on industrial waste treatment since 1951. However, I do feel that we are keeping ahead in the field of sewage where we take care of the transit business such as motels, trailer parks, apartments, etc.; but it is my feeling that we are slipping behind where our permanent population is developing. We have a tremendous amount of septic tanks being installed in subdivisions that should not be granted by the County Health Departments. In the field of industrial waste I feel that we are moving forward. It is felt that this is due to several reasons, and they are:

(1) Much fewer installations involved.

(2) No substitutes available in treatment of industrial waste, such as several septic tanks for sewage treatment plants.

(3) The County Health Departments have no jurisdiction in this field as they do with septic tanks in the field of sewage treatment.

(4) The promotion of the air and water pollution programs by the State Board of Health and the Federal Government.

(5) Public opinion is concerned about pollution, water and air, caused by industry. It is felt we get better support from the public in this field.

I realize that this is a rather long memorandum, however it was felt it was better to give you all the data available, from which you could sift and screen the data you would like to use in the forthcoming issue of Health Notes, "Water Pollution."

## Chart No. 1

## SOUTHWEST REGION — 8 COUNTIES

| | Population | No. of MS Projects | No. of MS Projects Acc. Totals | MS Projects Cost—$ | MS Projects Cost—$ Acc. Totals | No. of IW Projects | No. of IW Projects Acc. Totals | IW Proj. Cost—$ | IW Proj. Cost—$ Acc. Totals | No. of Operating MS Plants |
|---|---|---|---|---|---|---|---|---|---|---|
| 1951 | 94,630 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |
| 1952 | 97,810 | 1 | 1 | 26,000 | 26,000 | 0 | 0 | 0 | 0 | |
| 1953 | 101,030 | 0 | 1 | 0 | 26,000 | 0 | 0 | 0 | 0 | |
| 1954 | 109,836 | 5 | 6 | 70,601 | 96,601 | 1 | 1 | 2,000 | 2,000 | |
| 1955 | 114,653 | 6 | 12 | 2,114,748 | 2,211,349 | 2 | 3 | 5,000 | 7,000 | |
| 1956 | 130,000 | 9 | 21 | 1,703,514 | 3,914,863 | 4 | 7 | 11,000 | 18,000 | 17 |
| 1957 | 143,000 | 20 | 41 | 862,708 | 4,777,571 | 3 | 10 | 11,000 | 29,000 | |
| 1958 | 156,400 | 44 | 85 | 3,876,320 | 8,653,891 | 1 | 11 | 4,600 | 33,600 | 20 |
| 1959 | 167,400 | 56 | 141 | 4,567,363 | 13,221,254 | 6 | 17 | 19,300 | 52,900 | |
| 1960 | 187,500 | 67 | 208 | 3,918,581 | 17,139,835 | 4 | 21 | 93,500 | 146,400 | |
| 1961 | 218,800 | 79 | 287 | 2,154,570 | 19,294,405 | 5 | 26 | 26,000 | 172,400 | |
| 1962 | 223,600 | 60 | 314 | 1,625,126 | 20,919,531 | 7 | 33 | 34,000 | 206,400 | |
| 1963 | 239,400 | 58 | 405 | 3,374,671 | 24,294,202 | 12 | 45 | 198,900 | 405,300 | |
| 1964 | 234,200 | 59 | 464 | 1,850,937 | 26,145,139 | 6 | 51 | 139,864 | 545,164 | 132* |
| 1965 | 243,700 | 73 | 537 | 2,640,693 | 28,785,832 | 3 | 54 | 15,000 | 560,164 | |
| Ave/year last 15 years | | | 35.8 | | 1,919,056 | | 3.6 | | 37,344 | |
| Ave/year last 10 years | | | 52.5 | | 2,657,449 | | 5.1 | | 55,316 | |
| Ave/year last 5 years | | | 65.8 | | 2,329,200 | | 6.6 | | 82,753 | |

* As of October 1, 1964

## Chart No. 2

### SEWAGE TREATMENT PLANTS

| | |
|---|---|
| Imhoffs and ponds | 6 |
| Imhoff with secondary, and maybe ponds | 13 |
| Primary, trickling filter & secondary | 11 |
| Primary, trickling filter & secondary (overloaded) | 3 |
| Extended air, contact, activated sludge and maybe ponds | 99 |
| Extended, air, contact, activated sludge, and maybe ponds (under construction) | 5 |
| Air plants (overloaded) | 2 |
| Combination air plant with primary, trickling filter, secondary and pond | 1 |
| TOTAL | 140 |

### MUNICIPALITIES WITHOUT TREATMENT

(Raw sewage being dumped)

La Belle—Plans approved. Construction will start sometime during late 1966 or early 1967.

Everglades—Plans approved. City Council informed us they will not build.

Russell Park, near Ft. Myers—No plans to change this problem by S/D.

Englewood—No plans being made yet by CHD, and this office has appeared at public meeting.

Charlotte Harbor, near Punta Gorda—No plans by area being considered.

Moore Haven—Possible septic tank discharge thru storm drains and etc., into Caloosahatchee River.

### INDUSTRIAL WASTE DISCHARGE

(No treatment and more needed)

Citrus Plant at Arcadia
Gulf Naval Stores at Nocatee
Sugar Mill waste in Hendry and Glades Counties

## APPENDIX C-4

Date: August 29, 1966

To: Mr. D. B. Lee

From: Dick Starr

Subject: **Forthcoming Issue of Health Notes, Water Pollution**

In reply to your memo of August 24, I would like to break my region down into three categories to answer your question about pollution control. These categories would be the Keys, the Indian River Counties and the interior counties.

I would say that we have made progress in the Keys. This is mainly due to the fact that methods of waste disposal in that area have been so primitive that almost anything would be an improvement. To the best of my knowledge there are no more tidalflush cesspools being installed. In most cases these have been supplanted by septic tanks with a modified sand filter drainfield. This system has not been as successful as it should be due to the bootlegging of local unsatisfactory calcite material as sand. In the larger installations we are meeting with considerable success in providing package treatment plants and in many cases reclaiming the effluent from these plants for irrigation purposes. Several subdivisions have also provided sewers and treatment and there is evidence that the Naval installations will eventually provide effective treatment for their wastes. Industrial waste is not a significant problem in this area with the exception of laundry waste. There are still zones of pollution along the shorelines but they need to be better defined before the source can be determined.

The three counties along the Indian River are at best just holding their own in the overall picture. We have made notable progress in treating the municipal waste that used to go in the Indian River raw and have removed a number of tail pipe dicharges so that we show a net gain on the river. However nothing has been accomplished on the sewage from boats and from the bridge tender houses at the draw bridges. We continue to lose ground in the pollution generated by the continuing proliferation of septic tanks.

The potential pollution from discharge from agricultural lands increases constantly and there have been some problems with citrus processing waste that could increase as more groves come into production. There is also the new problem of sedimentation in the saline estuaries from expanded drainage works.

Okeechobee County is definitely a problem area and appears to be getting worse. While we have a sewage treatment plant for the City of Okeechobee the discharge of canning waste to this plant knocks it out for several months at a time with resulting gross pollution of Taylor Creek. If this problem can be solved and we get tertiary treatment of all sewage, the domestic waste situation will be satisfactory. However the enormous growth of the dairy industry in this county has created a problem of manure disposal which is going to be very serious if a solution for proper disposal is not worked out. Since this county is primarily agricultural there is not a serious problem at the moment from septic tanks but the areas near the lake will become critical in the future.

Highlands County has shown progress in municipal waste treatment but there is room for improvement and there are far too many septic tanks being installed. Industrial waste is not a problem at present and the agricultural operations do not appear to be harming the lakes in this area. I would say we were holding our own except for the septic tanks.

In viewing the overall picture I am forced to conclude that we are losing ground in combating pollution and will continue to do so as long as the concept that growth of any type is progress and until the agricultural interests are made to realize that they must conduct their operations so as to prevent pollution.

## APPENDIX C-5

September 2, 1966

**TO:** Mr. D. B. Lee

**FROM:** K. K. Huffstutler

**SUBJECT:** Stream Pollution, General

With regard to your memo of August 24th concerning information on water quality control for "Health Notes," we assume that our opinions are desired, since we received a copy of the memo. The following is a composite of the thinking of our people involved in water quality.

We do not feel that the State Board of Health is actually going "backward," however, we are not keeping pace with the growth of the state even when ignoring the unbalanced ratio of state population to agency resources.

Speaking strictly from an industrial waste and water quality standpoint (no domestic waste considered), some of the glaring shortcomings in the water quality program that could possibly be corrected without significant additions to personnel and other resources involve the modernizing of:

1. The education and knowledge of existing personnel
2. Methods of sampling and analyzing
3. Equipment—both field and laboratory
4. Yardsticks for measuring quality
5. Interpretation, storage and use of data

There is a strong need for improving public relations, in order to reveal the accomplishments brought about despite the shortages of resources. Better public relations would establish a uniform definition or interpretation of "pollution." There is a need for some sort of lobby to aid in the correction and improvement of existing laws. The entire program would be improved by better communications within the bureau. A case in point is informing the field personnel as to what each other is doing, and the resulting accomplishments. Industry should be made aware of the fact that we must have additional publicity; consequently, their particular company may be included in various news releases, good and bad, but with their knowledge.

We suggest that the bureau acquire an "eagerness" to refer possible cases to Dr. Sowder and Mr. Andersen, regardless of how flimsy the basis for such legal action may be. Such "eagerness" will greatly reduce the administrative delays, and in most cases, indicate to the public and press that something has been done before the news media set up their crusading campaigns against the State Board of Health. We know of no case where criticism of the State Board of Health has been forthcoming due to the lack of success when something has been attempted. All criticisms have been because the State Board of Health has failed to try for correction or improvement.

We leave any comments pertaining to domestic waste problems and nutrification resulting therefrom to the people closely associated with these problems. Of course, we are involved with the nutrification problems, but the stimulation of research toward the correction should come from the people in Baker's discipline.

Yachts and ships are polluters when they allow sewage or oil to spill into Florida's waters.

# APPENDIX D

**Reports from county sanitary engineers**

(1) Report from Robert L. Quick, director, Engineering Division, Dade County Department of Public Health

(2) Report from George T. Lohmeyer, director Sanitary Engineering, Broward County Health Department

(3) a. Report from Frank L. Cross, Jr., sanitary engineer, Manatee County Health Department

**Supplemental Reports from Manatee County**

(3) b. Report from Allen Kretschmar, director of Sanitation Division, Manatee County Health Department

(3) c. Report from George Dame, M.D., director, Manatee County Health Department

(4) Report from Donald W. Roberts, director, Sanitary Engineering, Hillsborough County Health Department

(5) Report from Harold Leadbetter, sanitary engineer, Pinellas County Health Department

(6) Report from Lawrence D. Lukin, director, Environmental Health, Palm Beach County Health Department

## APPENDIX D - 1

TO: D. B. Lee, Director
Bureau of Sanitary Engineering
Florida State Board of Health

FROM: Robert L. Quick, Director
Engineering Division
Dade County Department of Public Health

Water pollution is a subject that has received a great deal of publicity over the past several months with news releases relative to the Federal water pollution control program and state and local problems. The question of "What is pollution?" is an interesting one.

Water pollution manifests itself through changes in water quality, ranging from gross to subtle. Various authorities have offered, either directly or by implication, definitions of water pollution with the words "contamination," "nuisance" and "degradation" frequently encountered. The words contamination, nuisance and degradation are useful words but we have enough trouble defining "pollution." However, when a body of water is suffering from pollution, it is certainly degraded, probably contaminated and possibly creating a nuisance. One thing the definitions have in common is they all refer to the impairment of water quality and to the resultant adverse effect on water uses.

The Dade County Health Department and Florida State Board of Health have worked very diligently over the past 16 years to prevent pollution and preserve the water resources for the protection of the health of the people. In 1950, there were only two or three small sewage treatment plants serving isolated areas with portions of the City of Miami sewered but discharging this waste water into Biscayne Bay and the rivers through seventy (70) sewer outfalls. It wasn't until 1954, after repeated surveys and warnings from the Health Department, that the citizens voted and approved a bond issue that would remove these sources of pollution. Also, since 1954, there have been some 75 sewage treatment plants constructed with sewage collection lines serving the adjoining areas. It is estimated that a permanent population of approximately 564,000 are served by public sewerage systems which represents about 46 percent of the population of Dade County.

The fact that the people of Dade County are now aware of the problem of pollution is due to efforts of the Health Department over many years and the recent action at the Federal level. As a result of these efforts, several municipalities and the county have applied for and received Federal grants to install sewerage collection systems and transmission mains that will be of great benefit in removing pollution in the areas served. It is, of course, true that we still have many difficult problems ahead before a unified sanitary sewerage and disposal system can be constructed to serve the Metropolitan Dade County area as the estimated cost of the first phase of the project envisioned to be completed before 1970 approximates $100 million dollars. Thus, our day-to-day problem will be to halt the spread of water pollution in spite of the rapidly increasing industrial developments and population growth.

## APPENDIX D-2

September 11, 1966

David B. Lee, Director
Bureau of Sanitary Engineering
Florida State Board of Health
Jacksonville 1, Florida

Dear Mr. Lee:

This is written in reference to your recent memorandum called "Forthcoming Issue of Health Notes entitled 'Water Pollution.'" In this memo you requested an opinion from this department regarding the past, present and future situation on water pollution.

**PAST**—The writer has been with the Broward County Health Department since 1961. We feel that we may be in a better position than others to make evaluations on this topic inasmuch as we came into this regulatory field only a short time ago. While there is much to be done on water pollution control in the county we already feel, to paraphase Winston Churchill, never was so much owed by so many to so few members of the Florida State Board of Health for combatting water pollution to the degree that has been obtained. In 1947 the population of Broward County stood at approximately 69,000; today, approximately 20 years later, our population exceeds 500,000 people. With this tremendous increase in population it is completely understandable that with our few staff members we do have potential problems on water pollution. By and large our main pollution threat comes from some 85,000 septic tanks in our county. Because of this, it is a matter of record that the coliform count in our tidal canals is higher than desired.

**PRESENT**—Today, the Engineering Section of the Broward County Health Department consists of seven individuals responsible for 1006 approved public swimming pools, 40 approved public water systems and some 65 approved public waste water systems. With this meager staff this department also maintains 20 air pollution dustfall stations in the county, maintains surveillance of the bacteria quality of our public bathing beaches and tidal canals and maintains a responsible surveillance of all sources of industrial waste and pollution including four municipal-type incinerators. Our staff members work with our public swimming pool operators, water and waste water plant operators, assisting in training lectures throughout the year. Also to be mentioned is the review of plans on public water supplies, public waste water systems, industrial waste, public swimming pools and septic tanks. Our staff members and our County Health Officer have worked and are working diligently among the governmental leaders of the county in encouraging the leadership to provide consolidated waste water and public water supply systems. It is a matter of record that Broward County is one of the few larger counties in the State of Florida which presently has sufficient incinerator capacity to handle all putrescible, municipal garbage.

In spite of the need for additional staff members, this department looks at the future with optimism and confidence. In combatting our major problem, the septic tank, enormous strides are underway which in five to ten years should startle pollution control experts. We point out the City of Ft. Lauderdale is moving into a master sanitary sewer program which will provide sanitary sewers for all of the 125,000 people in the city just as soon as the engineering and monies are available. The City of Hollywood is planning to construct a 10,000 ft. ocean outfall which will not only accommodate the present 87,000 people in Hollywood but also the present 18,000 people in the City of Hallandale. The City of Pompano Beach already possesses an ocean outfall which will accommodate not only the 27,000 people in Pompano but also all of the citizens who will live in the Pompano Beach Greater Reserve Area. Also, Broward County has moved into a county utility system aimed at consolidating water and sewer facilities for the citizens in our unincorporated areas.

It cannot be denied that in spite of the challenges listed above, Broward County is presently in an enviable position insofar as air and water pollution is concerned when the tragic situations in other parts of the country are viewed. It is the firm conviction of this department that the citizens of Broward County want to maintain and improve upon these environmental conditions with the support of the officials elected by the people in Broward County which we have received and which we feel certain can be expected in the future. Environmental health conditions in this area will improve as each year goes by.

Sincerely yours,

George T. Lohmeyer, P.E.
Director of Sanitary Engineering
Broward County Health Department

## APPENDIX D-3a

August 31, 1966

Manatee County Stream Pollution
"Health Notes"

Mr. David B. Lee
Florida State Board of Health
Bureau of Sanitary Engineering
P. O. Box 210
Jacksonville, Florida

Dear Mr. Lee:

Reference is made to your memorandum dated August 24th, 1966 concerning the forthcoming issue of "Health Notes" entitled "Water Pollution."

As you know, past records of stream pollution would be hard for me to render, having been in Manatee County only since November of 1965. Prior to that time, Mr. Larsen headed up the sanitary engineering activities in this area on a regional basis. I would certainly be glad to comment on the present conditions of stream pollution activities in this county.

To start with, we have more than 70 sewage treatment plants, mostly package in nature, which have been badly neglected. Thus far we have inspected 10 of these units and have found all of them sadly lacking in maintenance and upkeep. We are also having difficulty obtaining operating reports from most of these facilities. We are in hopes that we can change this situation over a period of time and bring these plants into proper operation. The larger plants in this area, namely Bradenton and Palmetto, are generally working satisfactorily. In fact you will recall that the Palmetto plant received an award this year for its good operation.

Our activities at the present time include a new pollution control program in the county. A two story addition is being made at the Health Department; the downstairs section comprised of some 2000 square feet of floor space will be for administrative offices and the entire second floor, containing some 1900 square feet, will be a new pollution control laboratory. The staff for this Division presently consists of myself, Sanitary Engineer IV, a Stenographer II, an Engineering Aide I, and Engineering Aide II, a Chemist III, and a Laboratory Technician II.

With this new laboratory facility we should be able to do a considerable amount of stream pollution work along with the other projects involved in this area. We are currently working on the shellfish program, which would be directly related to stream pollution, and are trying to open up the Terra Ceia Bay area, both by shoreline survey and by bacteriological analysis. We are also routinely sampling Sarasota Bay.

We are also monitoring Ward Lake and the Braden River biweekly as a part of our stream pollution activities.

We have already established a pollution network for the county, consisting of some 12 stations, that will be monitored monthly after our laboratory goes into operation.

We are working very closely, at the present time, with the State Laboratory in connection with some fish kills that we have had of recent origin.

We have run two series of pesticides tests at low and high water flow, on the tributaries emptying into the new Manatee County water impoundment. Samples have been collected and analyzed from wells in the vicinity of the new Borden Complex, to determine the effect of Borden's gyp ponds on the underground water supply.

Samples have also been collected for background information from Bishop's Harbor to determine any possible effect of the discharge from the Borden Complex. Biological indicator jars are being collected and analyzed monthly in three locations in and around Piney Point.

We are enclosing a recent newspaper article and if you would like to use any of these pictures in the issue of "Health Notes," I am sure we can get the cooperation of the local papers to release these to you.

In regard to the future, I am sure that with the new facility and staff at our disposal that we will be able to monitor and control most of the future and existing problems in this area, given enough time to get functional.

If you need any more information or any more detailed information, please let me know.

Very truly yours,

Frank L. Cross, Jr.
Sanitary Engineer
Manatee County Health Department

## APPENDIX D-3b

### Supplemental Report

September 2, 1966 Manatee County

The 1946 population of Manatee County was approximately 25,000. Major population centers, then as now, were the city of Bradenton with an estimated 10,000 and the city of Palmetto, estimated at 3300. There was only one sewage treatment facility in the county, a military installation constructed during World War II at the airport with a capacity of 15,600 gallons per day, however another military installation on Palma Sola Bay was never completed. There were three municipal sanitary sewer systems, all discharging untreated wastes into the Manatee River or Wares Creek. These served from one-half to two-thirds of the population of Palmetto and Bradenton, respectively, with the third at Ellenton. The Ellenton system was installed during Florida boom days when it was a municipality and went into a trusteeship after disincorporation in the thirties.

The first pollution survey recorded was of the Manatee River, conducted from September 1947 through January 1948, and the results published on August 24, 1948. Gross pollution was evident from the raw sewage discharge. This began an educational program which has been continuously carried on in an effort to abate all water pollution in the county. On July 30, 1948 the Bradenton city council passed a resolution to begin a master sewerage project including central treatment facilities. The first phase was approved by the Florida State Board of Health, September 9, 1948 on condition that the sewage treatment plant would be constructed within five years. This first phase resulted in removal of raw sewage from Wares Creek. Further pollution surveys of the Manatee River were conducted November 1951 through February 1952 and in 1953 from October through November. As a result, the city of Bradenton, on December 8, 1953, held a referendum for the purpose of providing sewage treatment facilities and sewer extensions to serve the entire area within its corporate limits. The sewage treatment plant resulting was placed in operation in the fall of 1955 (dedicated October 23), however prior to that date an additional pollution survey was made of the Manatee River to determine its condition as Bradenton had by then grown to approximately 14,000 persons. In the spring of 1956 a follow-up survey was made to determine the improvement after plant operation. This resulted in opening the south side of the river for recreational purposes. This survey also pointed up the need for the city of Palmetto to proceed towards removal of its pollution contribution of the river, and from that date assistance was directed towards the need of sewage treatment facilities with adequate sewers for the city of Palmetto, having its referendum for such purpose on December 8, 1958. On August 28, 1960 plans were approved by Florida State Board of Health for 1.4 MGD secondary treatment plant with the related sewer extensions which would embrace the entire area within the corporate limits. This plant was put into service in the fall of 1961 with dedication on December 29.

The Manatee River was by now free of all major pollution. Route 301 highway construction through Ellenton in 1965 had destroyed a major portion of its sewerage system with individual septic tank installations following, removing its contribution through abandonment.

Manatee County now has a total of 87 sewage treatment facilities with treatment design capacities in excess of 6.8 MGD. These include the two municipal plants previously mentioned with total design capacity of 4.4 MGD, eleven subdivision systems with design capacity in excess of 1.5 MGD, the balance, in excess of 0.9 MGD, being for commercial establishments such as trailer parks, shopping centers, restaurants, et cetera. In addition there are eleven operating industrial waste water treatment facilities which serve one milk processing plant and the rest laundries. Through the construction of the waste water treatment facilities noted above, several sources of water pollution were corrected. This in addition to supplying facilities for the expanding population which would have, no doubt, contributed further to water pollution.

There are still water pollution problems in Manatee County, and probably always will be, as it appears that one of man's basic bad habits is to dispose of any and all types of waste by placing it in the nearest waterway. The present pollution factors at Holmes Beach it is believed will soon be eliminated as plans for Phase I of this sewerage system were approved November 9, 1965.

Continuing progress is being made in determining instances of pollution, locating the source and working towards abatement thereof. This is evidenced by present surveillance of Sarasota Bay, this area having been cleared for shellfish in 1965, and other programs presently being conducted on Wards Lake, Braden River, Bishops Harbor, Terra Ceia Bay, and the new Manatee River County Reservoir.

Allen Kretschmar, Director
Sanitation Division
Manatee County Health Department

## APPENDIX D-3c

## Supplemental Report

Manatee County with 80,000 permanent population and 700 square miles is located on the Gulf of Mexico and Tampa Bay. Until the rapid growth which began during the middle fifties, water pollution was not a problem. There were no significant polluting industries. Half of the people lived in Bradenton and Palmetto which were served by adequate sewage facilities. The rural and suburban population were sufficiently scattered and few in number that their septic tanks and privies posed no problems.

In the past dozen years numerous trailer parks and subdivisions have appeared in the suburban area. At first the policy of the health department and county governing body was liberal in the approval of septic tanks and their number and density reached the point in the early sixties that approval was no longer freely granted and a stronger stand was taken for sewage treatment plants in new residential developments. The largest developments already were served by such systems. The standards previously reserved for large developments were applied to smaller and smaller developments, and the present policy is to restrict septic tanks to the situation for which they were always intended, isolated rural homes. The health department cannot, of course, follow its policy in every case at the practical, operational level.

Since 1959 there has been definite evidence of water pollution problems in streams, rivers, drainage ditches, private wells and bays, as evidenced by grossly visible pollution and also bacteriological surveys and reports. The causes of the pollution appear to be the density of septic tanks, septic tank failures, septic tanks connected to storm sewers or otherwise lacking drainfields, dairy manure and wastes, and, to a minor extent, industrial wastes. There have been several instances of pollution by small businesses such as laundries and, on a few occasions, by a very large citrus processing plant. There are at this writing no other large industries which have produced detectable pollution problems. At the present time a factory which will produce triple superphosphate is nearing completion and there is strong probability that an industrial complex will develop in the Port Manatee area near this plant.

Since 1939, water supply to the City of Bradenton has been the Braden River and there has been a good treatment plant. The City of Palmetto supplies treated water from deep wells. Otherwise, there is a very large number of private wells and 150 small to large privately owned water companies. Manatee County will soon open its water supply to all the suburban area. This water will be taken from an impoundment on the upper Manatee River and will be treated. This new facility will greatly diminish private wells and water supply companies and decrease some of the hazards of water pollution.

Until November of 1965, Manatee County was served by a district sanitary engineer of the State Board of Health and he also served eight other counties. In November of 1965, the county employed a full time sanitary engineer and vigorously developed a full scale program to cope with air and water pollution. Other pollution control staff consists of a chemist, a laboratory technician, an engineering aide, a sanitarian, and a secretary. A pollution control laboratory will be operational by October 1. A special pollution control advisory committee appointed by the County Commission Board has been functioning for about a year. Special county enabling legislation for pollution control is being developed for introduction in the next Legislature. County health department personnel has increased from 14 in 1955 to 19 in 1960 and 42 in 1966. Sanitarians have increased from two in 1955 to five in 1960 and eight in 1966. Water pollution has never been a really serious problem in Manatee County due largely to relatively small size and lack of polluting industries. At this point, however, it is apparent that water pollution would definitely become a serious problem without controls. The Florida State Board of Health has provided vigorous extensive assistance to the Manatee County Health Department in dealing with all of the relatively minor problems transpiring in the past and also in establishing the present specialised pollution control program. The assistance has many times involved the State Health Officer, the legal staff, and especially the Bureau of Sanitary Engineering. In every case, the State Board of Health has promptly provided whatever and all help needed to solve all pollution problems which developed in Manatee County. This help was invariably effective in acute, more severe problems and, over the years, has staved off the worsening of water pollution.

After years of effort, only recently has the Board of Health convinced the public of the truly serious implications of the pollution problem and not even yet has the Legislature found sufficient funds to operate the kind of effective program the public now demands. To create a new state agency to control pollution rather than to finally provide the Board of Health with sufficient financial support seems political rather than expedient particularly as such action will have the effect of ignoring an excellent, functioning administrative system and ignoring years of sound experience and ignoring scores of well trained specialists in the field. Let us pass sufficient laws and provide sufficient monies and let the Board of Health continue to do a good job.

George M. Dane, M.D.
Director
Manatee County Health Department

## APPENDIX D-4

September 8, 1966

Re: Water Pollution
General

Mr. David B. Lee, Director
Bureau of Sanitary Engineering
Florida State Board of Health
P. O. Box 210
Jacksonville, Florida 32201

Dear Mr. Lee:

This is in reference to your memorandum of August 24, 1966 requesting an opinion from this office relative to the status of our water pollution control program and specifically to the progress which has been made during the 20 year period 1947-67.

I have given careful consideration to this matter and feel that significant progress has been made in this county. Recognizing that this information will be used in a forthcoming issue of Health Notes, I have chosen to highlight several of what I consider to be the more dramatic developments.

The first of these is the development of central sewerage systems. In 1946 Hillsborough County had no approved central systems; today 296,085 people are served by approved municipal or private systems. In 1946 there were no approved waste treatment plants in Hillsborough County; today we have 97 such plants.

There are three incorporated municipalities in Hillsborough County—Tampa, Temple Terrace and Plant City. In Tampa approximately 85 per cent of the population is served by the sewerage system; in Temple Terrace approximately 95 per cent, and in Plant City, approximately 80 per cent.

Modern waste treatment for our public schools is another accomplishment in Hillsborough County in which we take great pride. We have approximately 100,000 students who attend 127 schools. Of these 127 schools, all except 12 are either on sanitary sewers or have their own approved aerobic sewage treatment plants. Several of the 12 remaining schools on septic tanks will be provided with sewage treatment plans in the very near future. A review of the correspondence will reveal that the Division of Waste Water, along with our department, played a great part in convincing the School Board to provide sewage treatment plants rather than septic tanks.

We expect this trend toward central sewerage facilities to accelerate rapidly during the next few years. The Hillsborough County Board of County Commissioners are at this time making firm plans to provide central water and sewerage facilities to the unincorporated areas of the county.

The second item of special interest is the progress which has been made by the Lykes Brothers Meat Processing Company. In 1946 the Lykes Brothers Tampa plant dumped all of its waste untreated into the Palm River at a point near its entrance into McKay Bay. The result was gross pollution. Several years ago the Lykes plant was connected to the City of Tampa system and this extremely acute problem alleviated. Lykes Brothers has recently completed another meat packing plant near Plant City. This outstanding facility is said to be the largest of its type south of Chicago and the most modern in the world. The waste treatment plant which was constructed to serve this facility is of the most modern design and utilizes the latest technological advances in waste treatment methods. The cost is approximately $300,000. In my opinion this is dramatic progress.

I hope the above information will be of help in the preparation of the forthcoming issue of Health Notes. If I can be of further assistance, please call on me.

Yours very truly,

Donald W. Rogers, P.E.
Director of Sanitary Engineering
Hillsborough County Health Department

## APPENDIX D-5

September 21, 1966

Mr. David B. Lee, Director
Bureau of Sanitary Engineering
State Board of Health
P. O. Box 210
Jacksonville, Florida 32201

Dear Mr. Lee:

The following is a report of the progress of Pinellas from 1947 to 1966. Emphasis is placed on growth of public water supplies and municipal type sewage treatment facilities.

Approximately 90% of the population of 430,000 has access to sewer systems and public water supplies.

A high quality of leadership, conscious of the needs for clean water, was necessary in order to maintain the recreational waters bordering Pinellas County.

There is little doubt that within the past 14 years Mr. William E. Dunn has assumed a major role in the leadership of water quality control. Mr. Dunn worked 12 years in Pinellas County as director of the Environmental Health Program and was dedicated to the establishment of sewer systems and public water supplies. His most recent endeavors, the establishment of county-operated sanitary districts, has caused him to leave the County Health Department and assume the operation of the sanitary districts as well as continue to establish new districts. Without his efforts in Pinellas County, or without the efforts of an equally dedicated Health Department employee, the county would probably have fallen far short of goals which it has attained today.

Very truly yours,
Harold Leadbetter
Sanitary Engineer
Pinellas County Health Department

RCG/wl
Attachments

The facts in this report are extracted from a 20-page report submitted to the director of the Bureau of Sanitary Engineering by the sanitary engineer of Pinellas County Health Department.

**Tierra Verde**

This island community is served by two Marolf aeration plants of 30,000 gallons per day. Plans call for a three-phase expansion program of the sewage treatment plant which would have 100,000 GPD for each phase.

**Fort DeSota Park**

This county park is served by five aeration plants throughout the park which is completely sewered. Two of the plants are due for expansion.

## GULF BEACHES

**St. Petersburg Beach**

Twenty years ago the area was served by septic tanks. The first sewer lines and primary sewage treatment plant was installed in 1959 with 1.8 MGD design flow. In 1966, a secondary treatment plant was put into full use which is designed for a peak flow of 3.33 MGD. A total of 100 per cent of the platted area is served by the treatment plant known as Long Key Sewer District. This district was taken over by the St. Petersburg Beach in November 1966.

**Treasure Island**

Septic tanks served this city until sewer lines and sewage treatment facilities were installed in 1950. The treatment plant was expanded in 1956-57 and again in 1964 and converted to a contact stabilization sewage treatment plant. The present capacity is 2.2 MGD.

**Madeira Beach**

In 1947 the area was unsewered but a primary sewage treatment plant was constructed in 1952. It was redesigned and enlarged in 1959 to 2.2 MGD with a 27 per cent BOD removal. At the present time, the city engineers are preparing a feasibility study on their sewage treatment facilities and may recommend consolidation with another sanitary district.

**Indian Rock Beach, South Shore**

This area was served by septic tanks until a Hi-Cone activated sludge sewage treatment plant was put into operation in 1959. At this time the entire platted city was sewered. In 1966, this sewage treatment plant is operating at approximately 10 per cent of design capacity.

### Indian Rock Beach

This area is sewered by the McKay Creek Sanitary District. Prior to 1966 it was on septic tanks.

### Belleair Beach and Belleair Shores

The area is unsewered but applications have been made for federal money to finance sewers.

## PINELLAS PARK

In 1947, the area was served by septic tanks. The first sewer lines were laid in 1957 with four lift stations to pump sewage to a plant. In 1960, a conventional activated sludge sewage treatment plant of 1.0 MGD design flow was completed. In 1963 the sewage treament plant was enlarged and additional sewers and lift stations added. Further expansion is planned by 1970.

## ST. PETERSBURG

In 1947, the city had no sewage treatment. However, sewers were located in the downtown area which emptied into Tampa Bay after screening and chlorination. The first treatment plant was completed in 1954 and about 25 per cent of the city sewered. Three more primary treatment plants were added in 1956 and 1957 with approximately 50 per cent of the city sewered. In 1965-66, two of the sewage treatment plants were converted to modified activated sludge and the design capacity enlarged. All of the platted areas within the city are sewered. This is a part of a capital improvement program which includes storm drains, paving streets, lighting, widening streets, larger water and sewer trunk lines and beautification.

### County Sewer Districts

Pinellas County has completed or in the process of constructing seven sanitary districts which will serve about 82,600 persons with at least three sewage treatment plants and a capital outlay of $13,370,000 (for six districts) plus money acquired from general funds. The South Cross Bayou Sanitary District will have a 5 MGD design capacity plant which will serve the Pinellas County (Kenneth City), Boca Ciega, and Jungle Terrace Sanitary Districts; McKay Creek Sanitary District plant will have 800,000 gallons per day capacity and the Pinellas County Sewer System (Virginia Groves) will have a 100,000 gallons per day plant. A privately-owned sewage treatment plant is also operated in the Boca Ciega Sanitary District by the Bay Pines Estates.

## LARGO

In 1947, Largo was served by a septic tank and sewers in the downtown area. The first sewer lines were laid in 1925. The first primary sewage treatment plant was completed in 1954 and the city was 50 per cent sewered. The present plant of 1.5 MGD design flow was completed in 1962. The Newport Sewage Treatment plant was purchased in 1966 by the city and with mechanical renovation it will be tied into a master lift station. It is estimated that by 1968 all of the recently annexed areas will be sewered. Further plant expansion will be necessary by 1970.

## BELLEAIR

In 1961-62, Belleair constructed a modern Chicago Pump-Hi-Cone Aeration Plant of 0.5 MGD design capacity at an estimated cost of $1.25 million.

## CLEARWATER

In 1947, the city had municipal septic tanks and one primary treatment plant which was built in 1939. In 1966, Clearwater is served by three extended aeration plants with a total design flow of 6.5 MGD. A total capital outlay of $17.5 million has been spent in the past 20 years and one plant is being expanded from a million gallons flow per day to 5.0 MGD at a cost of $1.845 million.

## SAFETY HARBOR

In 1947 the city was on municipal septic tanks with 50 per cent of the city sewered. In 1955, Safety Harbor constructed a Spirahoff Treatment plant and in 1962 the municipality built a secondary trickling filter plant with a 0.35 MGD design flow.

## DUNEDIN

In 1947, Dunedin was served by municipal septic tanks and 35 per cent of the city was sewered. A primary sewage treatment plant was built in 1957 and 95 per cent of the city was on sewers. By 1966, the primary sewage treatment plant had been expanded to 3 MGD peak flow with a digester and clarifier added. In the immediate future, the city plans to expand the primary sewage treatment plant to a secondary plant, construct a permanent extended aeration plant and install more interceptors and lift stations.

## TARPON SPRINGS

The city was served by three 15,000 gallons municipal septic tanks in 1947 and 50 per cent of the city was on sewers. The first primary sewage treatment plant was built in 1951 and at that time the city was 95 per cent sewered. A 1960 feasibility study of sewage treatment has never been augmented but a budget request for another study was due to go before the City Council late in 1966.

## OLDSMAR

In 1964, the city purchased the existing sewage treatment plant from County Club Estates for $90,000 and floated a bond issue to pay off old water bonds and finance a modern secondary sewage treatment plant, sewer lines and lift stations at a cost of $512,000. The city has also received a federal grant of $141,000 as an aid in pollution control.

### Stream Pollution

A minimum of three surveys are made annually of five streams, three major lakes, several small lakes, and eight bays and bayous. Dissolved oxygen, salinities or bacteriological analyses are made during each survey. St. Joseph's Sound and Mullet Key areas receive 15 complete samplings during 1966.

### Industrial Wastes

Industrial waste has not been a large problem in Pinellas County. Communities have developed by the influx of retired families and tourist trade. Unlike Tampa, which relies heavily upon industry, St. Petersburg and the other cities in Pinellas County have remained mostly residential in nature.

Light industry is present and plating wastes from small plating companies is the major source of industrial waste. A recent move to raise the standard of the effluent emitted by these sources has been put into effect with the assistance and guidance of the Division of Industrial Waste, Florida State Board of Health.

## APPENDIX D-6

September 20, 1966

TO: David B. Lee, P. E., Director
Bureau of Sanitary Engineering
Florida State Board of Health

FROM: Lawrence D. Lukin, P. E.
Director of Environmental Health

SUBJECT: **Palm Beach County**
**Stream Pollution**

This report is aimed at reflecting the progress made in the last two decades toward abatement of water pollution in Palm Beach County. We should bear in mind that a direct comparison using the identical parameters would naturally mislead in the interpretation of end results. Twenty years ago the indexes of pollution and the uses of water were appreciably different than they were 40 years ago, and more so 60 years ago and so on. A measure of progress then should be based not only on the engineer's indexes of the 1940's but also by the changing environmental demands of the 1960's.

We can capsulate the changing abatement criteria into two major categories:

A. The indexes of measurement of pollution.

B. The degree of tolerable pollution.

A. **The Indexes:**

The engineer has selected his yardstick wisely in M.P.N.'s, D.O.'s, B.O.D's, etc. in that the collection of samples, laboratory work and interpretation of results are simple and inexpensive. The coliform organism count has had universal acceptance as an association with pathogens on the basis of "Guilt by Association."

New acquaintances to the engineer, namely the ecologist, pathobiologist, and microbiologist have suggested the need for more specific indexes of pollution. The ecologist points out the more reliable index of pollution is the biomass that lives in the streams or bodies of water. Changes in the ecological system are more sensitive measures of pollution compared to the grab samples favored by the engineer. The fish, crustacea, plankton, etc. are continuous samplers of the water quality.

We should also ask:

Is the potential of transmission of disease limited to the bacteriological concentrations? Only recently has suspicion of the microbacteria become implicated in transmission via the water route. The survival of the viruses after destruction of the coliforms challenges the current indexes of pollution.

### B. The Degree of Tolerable Pollution

What degree of treatment and subsequent pollution load on a stream represents adequate protection to the broad environment? The answer to this question reaches beyond the public health aspects of the human animal. We are confronted more and more each year with the demands of the conservation people and the game and fresh water fish interests. If we agree to recognize the aims of these groups, then our current standards of tolerable pollution will have to be upgraded.

Progress in Water Pollution in Palm Beach County is best measured by classifying the many areas of activity and weighing them on their individual balances rather than the program as a whole. Below is a categoric comparison showing progress in three degrees of accomplishment in the last 20 years.

**I. Areas of Significant Progress**

A. Extension of municipal sewage treatment.

B. Upgrading of new and existing treatment facilities to tertiary treatment or ocean outfall systems.

**II. Areas of Minor Progress**

A. Subdivision curtailment on septic tank systems.

B. Industrial waste discharges.

**III. Areas of Stagnancy or Digression**

A. County-wide planning.

B. Expansion of staff and personnel to meet the growing environment.

C. Legal assistance on a county level.

D. Upgrading of privately owned sewerage facilities.

# APPENDIX E

"Health Aspects of Water Pollution" from Weekly Compilation of Presidential Documents, Monday, September 5, 1966, Vol. 2, No. 35. pp. 1155-1205.

## HEALTH ASPECTS OF WATER POLLUTION CONTROL

**Interdepartmental Agreement Concerning Consultation Between Departments of Health, Education, and Welfare and the Interior. September 2, 1966**

1. This Interdepartmental Agreement has been developed in accordance with the provisions of Section 1(f) of Reorganization Plan No. 2 of 1966, which states:

"The functions of the Surgeon General under Section 2(k) of the Water Quality Act of 1965 (79 Stat. 905) are transferred to the Secretary of Health, Education, and Welfare. Within 90 days after this reorganization plan becomes effective, the Secretary of the Interior and the Secretary of Health, Education, and Welfare shall present to the President for his approval and interdepartmental agreement providing in detail for the implementation of the consultations provided for by said Section 2(k). Such interdepartmental agreement may be modified from time to time by the two Secretaries with the approval of the President."

2. The functions referred to above are defined by Section 2(k) of the Water Quality Act of 1965, as follows:

"The Surgeon General shall be consulted by the head of the Administration on the public health aspects relating to water pollution over which the head of such Administration has administrative responsibility."

3. The public health aspects of water pollution relate to man's drinking water; to his contact with water in recreation and work; to the contamination of food sources, particularly shellfish; and to the breeding of specific insect vectors of disease. The health threat is of three types; (a) chemical—both organic and inorganic contaminants, which can result in acute toxic or long-term chronic effects on humans; (b) biological—microbiological contaminants and insect vectors associated with spread of communicable disease; and (c) radiological—radioactive contaminants which in very low level concentrations may produce radiation damage in humans.

4. Consultation between the Departments of Health, Education, and Welfare and the Interior under the terms of this Agreement shall be based upon the following general concept:

(a) The Department of the Interior is responsible for administering the Federal Water Pollution Control Act as amended;

certain functions relating to water pollution control under Section 702(a) of the Housing and Urban Development Act of 1965, Section 212 of the Appalachian Regional Development Act of 1965, and Section 106 of the Public Works and Economic Development Act of 1965, and Executive Order 11288, "Prevention, Control, and Abatement of Water Pollution by Federal Activities."

The stated purpose of the Federal Water Pollution Control Act is "to enhance the quality and value of the nation's water resources and to establish a national policy for the prevention, control, and abatement of water pollution." The responsibilities of the Department of the Interior, under the above legislation and Executive Order, involve the prevention and control of water pollution in consequence of the benefits resulting to the public health and welfare, giving due regard to the improvements which are necessary to conserve the nation's waters for public water supplies, propagation of fish and aquatic life and wildlife, recreational purposes, and agricultural, industrial, and other legitimate uses. To meet these responsibilities the Department of the Interior, through the Federal Water Pollution Control Administration, conducts programs to identify and measure the extent of pollution and its effects on water uses and to assure the treatment and control of waterborne wastes.

(b) The Department of Health, Education, and Welfare, under the Public Health Service Act as amended, is responsible for the protection of the public health. Within this responsibility, the Department through the Public Health Service is, therefore, concerned with the causes, diagnosis, treatment, control and prevention of physical and mental diseases and impairments of man. As related to Reorganization Plan No. 2, these responsibilities include: determination of the health significance of water pollution; investigation of waterborne diseases and means for their control; provision of consultation to the Department of the Interior on the public health aspects of water pollution; and advising on the public health questions involved in the inclusion of storage for water quality control in Federal reservoirs.

5. Under the terms of this Interdepartmental Agreement the Department of Health, Education, and Welfare will provide advice to the Department of the Interior as follows:

(a) Recommendations on criteria for water quality standard setting based on health aspects of intended water use for drinking water supplies, shellfish and other marine food production, bathing, and other water contact activities. Recommendations will be provided and modified as new supporting data are developed.

(b) Upon request, consultation and technical assistance on specific water-related health problems, as these may arise in connection with water pollution control activities, such as comprehensive pollution control program, enforcement actions, control of pollution from Federal installations, water pollution research projects, construction grants, and the study of water pollution from vessel operations. In cases where epidemiological surveillance activities indicate that a probable public health hazard exists, the Public Health Service will initiate appropriate action to advise the Federal Water Pollution Control Administration.

(c) Review and comment on construction grant applications and on requirements for control of pollution from Federal installations for specific projects whose operation may adversely affect the sanitation of shellfish-growing waters. The Federal Water Pollution Control Administration will refer all such projects to the Public Health Service for review and comment.

6. Section 1(e) of Reorganization Plan No. 2 of 1966 provides for the Department of Health, Education, and Welfare to advise on public health questions involved in determinations by Federal agencies of the need for and value of the inclusion of storage for water quality control in Federal reservoirs. Advice on the effects of streamflow regulation on public health will be provided by the Public Health Service based upon the studies prepared by the Federal Water Pollution Control Administration under Section 3(b) of the Federal Water Pollution Control Act. The Federal Water Pollution Control Administration report will be provided to the Public Health Service for review and comment. The Public Health Service comments, together with its own report on the production of disease transmitting insects and other environmental health considerations in the project area, will be submitted to the Federal construction agency concerned.

7. To assure an adequate basis for such advice and consultation to the Department of the Interior, the Department of Health, Education, and Welfare will, through the Public Health Service, conduct the following kinds of studies on the health aspects of water pollution:

(a) Epidemiological, microbiological, radiological, and toxicological research and investigations into the human health significance of waterborne contaminants, to determine health tolerance for such contaminants as they affect drinking water supplies, shellfish and other marine foods production, and water contact activities.

(b) Epidemiological surveillance of the incidence of waterborne disease based on disease reporting, and on health-related water quality data derived from the Public Health Service drinking water quality network established under the Interstate Quarantine Regulations, the National Shellfish Sanitation Program, and the Radiation Surveillance Center, and on data from the program activities of the Federal Water Pollution Control Administration.

Investigation of waterborne disease outbreaks will be conducted in cooperation with State and local health departments. Data and participation will be requested from the Federal Water Pollution Control Administration when water pollution is involved in the outbreak. Reports based on these investigations which identify pollution that presents a danger to health will be referred to the Federal Water Pollution Control Administration for appropriate action.

(c) Studies of the relationship of surface water characteristics to the production of disease vectors such as disease-transmitting insects, snails, and protozoa.

(d) Development of techniques for the identification, measurement and study of the behavior of waterborne contaminants which cause or influence disease, such as viruses, bacteria, organic chemicals, and trace elements. The results of these Public Health Service studies will be made available to the Federal Water Pollution Control Administration as a complement to its studies on identification and measurement of water pollutants, the results of which in turn will be made available to the Public Health Service.

Study of methods of removing contaminants of health significance to meet human tolerance levels as related to drinking water, swimming pools, shellfish depuration, and food processing. To avoid duplication of Federal installations for pilot plants, when such facilities are required to study methods of removing contaminants from drinking water, Public Health Service personnel may use Department of the Interior facilities. To assure that such installations will adequately serve such purposes, the Department of the Interior shall consult with the Department of Health, Education, and Welfare in their design.

Study of the human health relationship of waterborne contaminants to animals and plants used as sources of foods, such as shellfish and other marine foods, food crops irrigated with polluted water, including their field packaging, and use of sewage sludge as a fertilizer and soil conditioner.

8. The Public Health Service and the Federal Water Pollution Control Administration will exchange on a regular basis relevant health-related water quality data and research results. Particular attention will be given to prompt exchange of significant new findings which would affect the program responsibilities of either agency.

9. To effect essential coordination between Public Health Service and the Federal Water Pollution Control Administration, and to insure fulfillment of this agreement, each agency will designate an official liaison representative. These representatives, together with appropriate staff, shall meet at the request of either agency to discuss measures taken to implement this agreement and review any evident or emerging technical, administrative or fiscal problems which either agency considers might affect the proper functioning of this agreement. Any unresolved problems will be brought to the attention of the respective Secretaries.

John W. Gardner
Secretary of Health, Education, and Welfare
August 8, 1966

Stewart L. Udall
Secretary of the Interior
August 8, 1966

Lyndon B. Johnson
The President
September 1, 1966

# APPENDIX F

(1) Letter from Wilson T. Sowder, M.D., Florida State Health Officer, to H. B. Cottrell, M.D., Regional Health Director, U. S. Public Health Service, Region IV, Atlanta, Georgia.

(2) Letter from Howard W. Chapman, associate regional health director, for Environmental Health Service, U. S. Public Health Service, Region IV, Atlanta, Georgia, to Wilson T. Sowder, M.D., Florida State Health Officer.

## APPENDIX F (1)

August 12, 1966

H. B. Cottrell, M.D.
Regional Health Director
U. S. Public Health Service—Region IV
50 Seventh St., N.E.
Atlanta, Georgia 30323

ATTENTION: Mr. Howard Chapman

Dear Doctor Cottrell:

Enclosed is a copy of a recent memo of mine concerning the Florida State Board of Health's interest in an improved public information program, especially on air and water pollution control programs. I am bringing this to your attention because I think it would be helpful to the Florida State Board of Health to obtain your thoughts and assistance on this matter.

In particular, I would like to request a very brief report comparing Florida pollution problems and control programs to other states in your region or perhaps to the rest of the country. If you can meet this request, I think you would satisfy our needs by limiting your response to an evaluation and comments on materials, information, and impressions you already have on hand. I know this may restrict you to making only general observations; however, I do not believe our situation or public information purposes warrant anything more than that at this time. Your permission to publicly quote any of the comments you may be able to send will be appreciated.

Sincerely,
Wilson T. Sowder, M.D.
State Health Officer

WTS:mw
Enc.

## APPENDIX F (2)

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
Regional Office
PUBLIC HEALTH SERVICE

Rm. 404, 50 Seventh Street, N.E.
Atlanta, Georgia 30323

September 6, 1966

Dr. Wilson T. Sowder
State Health Officer
State Board of Health
Jacksonville, Florida 32201

Dear Dr. Sowder:

This is in regard to your letter of August 12 to Dr. Cottrell, requesting a brief report on Florida's water and air pollution problems and control program. Enclosed with your letter was a copy of your July 28 memorandum to County Health Officers, etc. on "Information Program and Legislative and Budgetary Proposals on Air and Water Pollution Control Programs", and a copy of the proposed act "State Environmental Control Act."

To comply with your request it is necessary to treat air and water pollution separately, as follows:

**Water Pollution**

In general, the Florida State Board of Health has done an excellent job in obtaining treatment of wastes from municipalities. The statistics on the number of municipal waste treatment plants built in the State of Florida during the last few years are, indeed, most impressive. During the period 1961 through 1965, 1003 separate treatment plants were approved for construction. No State within this Region, and only a few nationally, have had the rate of population growth and urban expansion, with its accompanying municipal waste problems as has Florida.

The State Board of Health has carried out some extensive studies on special local water pollution problems such as those associated with the phosphate industry. These studies are commendable, but staff resources should be available to cover **all** industrial wastes and stream problems in the State.

One of the real glaring weaknesses in Florida is State law which exempts certain industrial areas from pollution control. No

State in the Southeast has similar exemptions in its law. Also, as in other States, Florida has serious pollution problems relating to the larger municipalities such as Jacksonville and Miami.

In the "Staffing and Budgetary Guidelines for State Water Pollution Control Agencies," prepared by the Public Administrative Services, Chicago, Illinois, (see enclosed copy) it is suggested that Florida have a minimum staff of 58 persons, but a staff of 93 persons for its water pollution control program would be more desirable. To support this staff a minimum annual budget of $528,000 would be required, and a desirable budget of $847,000. Florida's present staff and budget is less than one-half of the minimum recommended.

The Florida State Board of Health has an effective water pollution control program which has done much to control or minimize pollution in the State. However, to cope with the pollution problems associated with population growth, urban and industrial expansion, etc., the following is needed:

1. Strong legislation providing all the authority needed to do a complete job.
2. Adequate budget and staff.
3. Initiate long-range planning for water pollution control which includes a comprehensive approach for stream studies and abatement of pollution from all municipalities and industries.

## Air Pollution

Based on 1965 data, the Florida State Board of Health spent approximately $176,000 for air pollution activities or approximately 3.5 cents per capita per year. The average in 35 States during the same year was 4 cents. However, this comparison of Florida with other States is somewhat misleading since approximately $146,000 of the $176,000 was spent in the Polk-Hillsborough-District, leaving only $30,000 for the remainder of the State. Therefore, the per capita per year expenditure in the Polk-Hillsborough District was about 23.4 cents, and the remainder of the State 0.6 cents. If the Polk-Hillsborough District is considered a "local" program, the expenditure of 23.4 cents per capita compares favorably with the 1965 average of 22.6 cents for 130 local programs. Obviously, the 0.6 cents per capita for the State's activities is much below the national average of 4 cents. In general, a comprehensive State air pollution program that includes studies, technical assistance to local programs, plan review and approval, and enforcement authority should have a minimum budget of from 2-5 cents per capita per year.

Unquestionably, the State program and activities in the Polk-Hillsborough District have effectively reduced air pollution emissions in this area. This has been accomplished even though there has been a tremendous expansion of the phosphate rock processing industry within the last eight years. It is generally agreed, however, that the air pollution problems are not completely resolved and much additional effort is needed. The Florida State Board of Health is fortunate in having on its staff engineers who are nationally recognized for their expertness in the field of air pollution control from phosphate rock processing operations.

I would like to comment briefly on the proposal for $1,000,000 in grants for local air and water pollution control programs, as well as the proposal to shift $500,000 from the State program to the local program—providing, in all, $1,500,000 for local activities.

State grants to the more populated Counties, or to Counties that have special or unusual problems, may be appropriate and should be productive. According to the 1960 census, there were 11 Counties in the State with populations in excess of 100,000 and 10 with between 50,000 and 100,000. It is doubtful that Counties with less than 50,000 population would have the resources, interest, or variety of staff to mount a successful program in either the water or air area. I would, therefore, suggest that if grants are to be made to County health departments that specific criteria or guidelines be developed and followed which would exclude grants to Counties where it is doubtful a meaningful program could be established, and where it is evident that the State could provide the services better and more economically.

In addition, it is imperative to have a clear understanding of the State and County health department roles. The local program should supplement and complement the State's program. The State program should continue to have the responsibility for laboratory services, setting of standards, provision of expert technical services, comprehensive long-range planning and enforcement.

Sincerely yours,

Howard W. Chapman
Associate Regional Health Director
for Environmental Health Services

## WHAT ARE WATER POLLUTANTS?

Sewage
Infectious organisms
Plant nutrients—nitrogen and phosphate fertilizers
Organic chemicals exotics — detergents, insecticides, pesticides, herbicides, DDT, 100 synthetic organic insecticides, inorganic pesticides
Mineral and chemical substances—salts and acids
Soil sediments
Radioactive substances
Heat

## WHO OR WHAT ARE WATER POLLUTERS?

Air Force bases
Airlines
Army bases
Banks
Beauty and barber shops
Bootleggers
Bus stations
Chemical plants
Churches
Citrus growers
Commercial ships
Dairy farmers
Distilleries
Electrical generating stations
Garages
Golf courses
Homeowners
Hospitals
Indian villages
Industrial plants
Insurance offices
Lumberyards
Motor boats
Muck farmers
Naval vessels and installations
Paper and pulp mills
Phosphate mining and processing plants
Railroad trains
Rendering plants
Restaurants
Schools, colleges and universities
Septic tanks
Sewage treatment plants
Slaughterhouses
Soft drink bottlers
State office buildings
State hospitals and institutions
Stores
Swimmers
Well drillers
Zoos

THESE ARE ONLY A FEW OF THE POLLUTERS BUT THE LIST INCLUDES . . .

*Everybody*

People fish and water ski on Duval County's Cedar Creek despite the fact that it is polluted.

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